Chemical Week

May 15, 1954

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see p. 41

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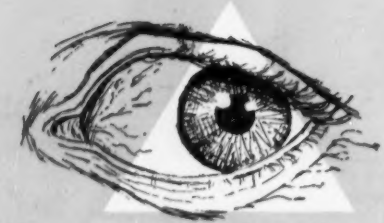

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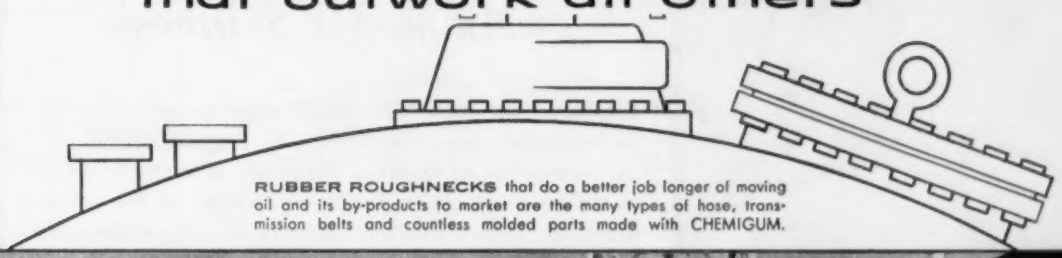

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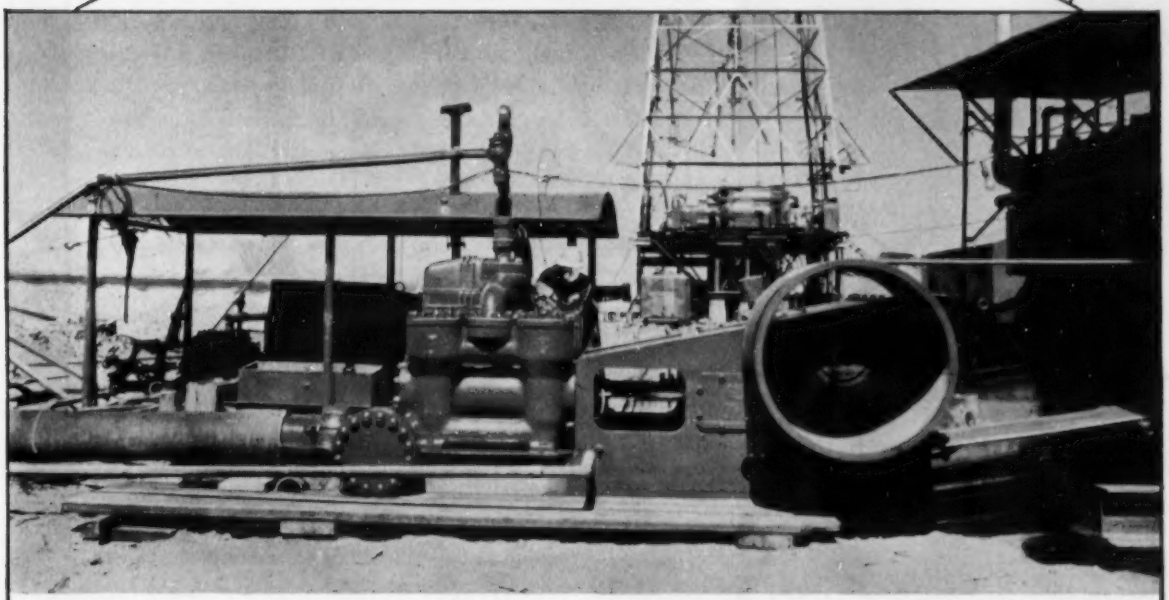

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Chemical Week

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OPINION . . . . . .

Bugs and Weather

TO THE EDITOR: . . . The type of information in your news article "Bugs, Weather: Can They be Correlated?" (*April 10*) is very interesting, and to which we feel more attention should be given.

Weather perhaps has more to do with the development of insects than any other factor, yet much needs to be done to study and evaluate the actual influence of the various weather factors on insect activities.

On some insects, such as the grasshopper, considerable study has been made on the number of heat units required for the development of the egg and, as you indicate, considerable knowledge has been obtained on the boll weevil.

Articles of this nature can do much to stimulate the search for further information relating to insects. Publications such as yours can reach a field that entomological bulletins and other similar technical publications do not contact . . .

KELVIN DORWARD
Head, Economic Insect Survey Section
U.S. Dept. of Agriculture
Agricultural Research Service
Washington, D. C.

TO THE EDITOR: . . . Your news article on the relationship between weather conditions and insecticide market prospects (*April 10*) appears to have had a good background of research . . . presents a story we are anxious to pass along to our member companies and to leaders of agriculture . . .

Your treatment of this subject as it relates to the boll weevil is important and should help materially in pointing up the possibilities that await study if sufficient time is given to attempting correlations in this field.

We have been working with survey groups in USDA and state organizations for the past several years in an attempt to get sufficient information from the field from season to season to form some basis upon which manufacturers can determine chemical needs for each crop season.

So far the results have been slim but the organization of surveys—especially with the insect groups—has been expanded, and during the 1954-55 winter months we expect to have sufficient information on insect populations to enable us to draw up some conclusive evidence for predictions of needs for the 1955 season . . .

I personally believe, as an entomologist, that much more can be done than is being done at present. It is a matter of bringing together all the known facts over a considerable period of time to predict these trends of weather factors related to various insect species as well as to plant diseases. A study has been made correlating the incidence of blue mould of tobacco and the weather conditions preceding transplanting tobacco from the seed beds . . . which we have already published . . .

I believe that this is an important subject and, if it is brought to the attention of more people, possibly research studies can be made by colleges or the USDA in the next few years.

CHEMICAL WEEK is carefully read by our members and information of this nature appearing in your publication will receive attention by the principal administrators and technical people in this field . . .

VAL E. WEYL
Editor
NACA News and Pesticide Review
National Agricultural Chemicals Assn.
Washington, D. C.

Preserve Professions

TO THE EDITOR: . . . The idea that professional engineering as such may be ethically and legitimately purveyed by corporate entity should be recognized and given legal sanction. . . .

Your comments re medical men and professors carry the ring of logic. The professor and the college for which he works are dispensing a teaching-learning process. The medical man and the hospital for which he works are dispensing a variety of medical services. In each case there is some unanimity of purpose and an obviously desirable combination of talent (of the individual) and facilities (of the corporate entity).

Similarly, a corporate entity in which, under which, and by which a number of individual engineers may jointly operate should be a legitimate and ethical arrangement.

But, let not ill-advised legislators admit the contractors and equipment vendors to the profession. As it is written, the Carlino-Milmoe bill is just about the worst thing that might be foisted upon a struggling profession . . . it would permit purveying of (alleged) professional engineering by contractors, equipment peddlers. . . .

Either the legislators should reaffirm and restate an honest definition of *professional engineering* . . . or include a provision: "No corporation shall practice professional engineering if it, or any subsidiary, affiliate, division or otherwise related corporate entity shall be engaged in the sale of anything other than professional engineering services as such."

The contractors and peddlers have already adequately prostituted the profession. Let's stop it before it is entirely too late. . . .

FREDERICK WIERK
Consulting Engineer
Jacksonville, Fla.

TO THE EDITOR: . . . You, I see, are in favor of the Carlino-Milmoe bill, allowing corporations to practice engineering. . . . Your editorial note, which states your position and seeks to explain the professional opposition to the bill, is an insult to all learned professions, and it cannot go unanswered.

It shows not only a misunderstanding of the professional position; it displays a gross ignorance of what constitutes professional service to the public, and, also typical of the business mind, it demonstrates a crass neglect of matters relating to the public welfare. . . .

. . . You refute as "pseudo-logic" the contention of the opponents of the Carlino-Milmoe bill, that it would affect the dignity of the profession, by your own brand of pseudo-logic, thus: "Medical men are employed by incorporated hospitals without loss of dignity; professors are employed by incorporated colleges with their dignity unimpaired." . . .

Hospitals and other corporations, which employ medical men, are *not*, and cannot be, licensed to practice medicine; only qualified *individuals* can practice medicine. The New York Engineering Law, as it stands, follows the medical profession in this respect. . . . It only prohibits *business* corporations from holding themselves out to the public as *professionally qualified persons*.

The present New York Engineering Law does not prohibit the practice of engineering by nonprofit cor-

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

porations, all of whose members are licensed practitioners. . . .

Actually, it is much more than a mere matter of professional dignity that is at stake here. It is, first, a matter of insuring the public welfare. Secondly, it is a matter of preserving public confidence in a profession that is motivated by service—not profit. It is this public faith in the ability and intention of the professional person that can be readily undermined by an impersonal, profit-hungry corporation.

There is nothing wrong with corporations or business methods *per se*. . . . But they have their place only in *business enterprise*. They cannot be allowed to intrude with their practices into the professions. In commerce, the profit motive and competition on the basis of cost and price is quite proper. In the professions these would be disastrous. . . .

. . . The professions seek to protect those areas of the economy that require the personal qualities of intelligence, learning, character, and probity —qualities that a corporation, of itself, cannot possess. . . .

. . . The intention of the Carlino-Milmoe bill is *not* to further the public interest . . . the intention is only to gain an advantage for corporations that are primarily engaged in the construction or manufacturing *business* by raising them to the dignity of a "profession" and allowing them to compete with professional men on a *businesslike* basis. . . .

FRANK MEMOLI
Cincinnati

DATES AHEAD

Flavoring Extract Manufacturers Assn., annual convention, Biltmore hotel, New York, May 16-19.

American Institute of Chemical Engineers, spring national meeting, Kimball hotel, Springfield, Mass., May 16-19.

Chemical Market Research Assn., annual meeting, Statler hotel, New York, May 20.

Chemical Specialties Manufacturers' Assn., midyear meeting, Netherland Plaza hotel, Cincinnati, May 23-25.

American Water Works Assn., annual conference, Seattle, May 23-28.

Atomic Industrial Forum Inc., topic: nuclear reaction development, Sheraton Park hotel, Washington, D.C., May 24.

Technical Assn. of the Pulp and Paper Industry, paper coating conference, Poland Spring House, Poland Spring, Me., May 24-26.

Society of the Plastics Industry, exposition, technical conference, Public Auditorium, Cleveland and Statler hotels, Cleveland, June 7-10.

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FINANCIAL AID TO HIGHER EDUCATION

Our Colleges and Universities Face Grave Financial Problems

For the past decade the nation's colleges and universities have been caught in a destructive financial squeeze. It is particularly destructive for the independent, privately endowed institutions. Unless extraordinary measures are taken to relieve this squeeze, it promises to become progressively worse. To let it do that is to court a national disaster.

This is the first of two editorials devoted to the financial plight of our colleges and universities. This first editorial deals with the character of the problem, present and potential. The second will indicate some things that need to be done about it, and particularly what American business might do.

Enrollment Soars, Income Lags

In broad outline, the financial problem that afflicts our colleges and universities is simple. The demand for their services has increased rapidly, and promises to keep on increasing even more rapidly. At the same time, their financial capacity to provide these services has lagged behind, primarily because of price inflation.

Between 1940 and 1950, college and university enrollment increased from approximately 1⅓ million to 2⅓ million—about 75 per cent. Over the same period, the educational income of these institutions, measured in terms of its actual purchasing power, increased only about 64 per cent. Thus, at the end of the decade, our colleges and universities as a group had, on the average, about 6 per cent less to spend per student than they had at the beginning. Meanwhile, the rapid advance of science and technology had made a good college or university course a much more expensive operation than it was in 1940. Since 1950, the latest date for which comprehensive figures are available, the financial squeeze on our colleges and universities has intensified, largely because of another wave of price inflation touched off by the Korean War.

Among the colleges and universities, the independent, privately endowed institutions are particularly hard pressed. In terms of actual purchasing power, the independent liberal arts colleges are now spending at least 20 per cent less per student than they spent in 1940. Public institutions of higher learning, supported out of tax revenues, have managed to increase slightly their expenditure per student. Otherwise, the financial squeeze on higher education as a whole would be even more severe.

Why Independent Colleges Are Hit Hardest

The principal reason why the independent colleges and universities are so hard up is the shrinkage in their income from endowments. These endowments, created in other days by gifts of generous benefactors to help pay the expenses of higher education, have been hit hard from two directions. During the war and post-war years, the tax collector took so large a part of the incomes and estates of wealthy people that this source of endowments has been greatly reduced. Over the same period price inflation cut in half the purchasing power of the income derived from existing endowments. In 1940 income from endowments provided 26 per cent of the total income of the independent colleges and universities. By 1950 it provided only 14 per cent. The figure is still lower today.

The financial plight of the independent colleges and universities is directly reflected in the salary status of their teaching staffs. In mid-1952 a national survey showed that, after adjustment for the increased cost of living, the salaries of those holding full professorial rank in these institutions were 12 per cent lower than they were in 1941-42. Junior teachers, with the rank of instructor, fared somewhat better. In terms of actual purchasing power, their salaries declined only 2 per cent over the 12-year period, largely because there is more direct competition for their services from industry. Over the same period, the real wages of industrial workers increased 55 per cent.

Time Will Not Provide a Cure

The plight of the colleges and universities, which is shared in some degree by all parts of our educational system, is not one that can be left to time for a cure. On the contrary, the financial problems of our institutions of higher learning will be intensified in the years ahead by the pressure of rapidly increasing enrollments. Present prospects indicate that during the next decade college and university enrollment will increase by about one-third, or from 2⅓ million to over 3 million. The problem of increased enrollments will become particularly acute toward the end of this decade when the babies born during the great surge of population in World War II are ready to enter college.

Such an increase in population as that now in prospect can be a tremendous asset to the nation. It is still a truth, even though it is worn a bit thin by frequent repetition at commencement exercises, that a nation has no resource more valuable than the education of its people. And the better the education, the more valuable the asset.

But to realize this, our colleges and universities must have the financial strength to handle the increased enrollments that face them in the years ahead. This means that we must relieve our independent colleges and universities, in particular, from the financial squeeze in which they are now caught and make them full partners in the economic well-being of the nation. Some of the means by which American business might help achieve this will be discussed in a second editorial.

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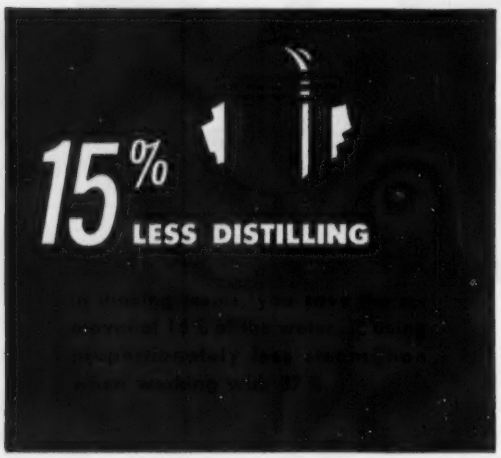

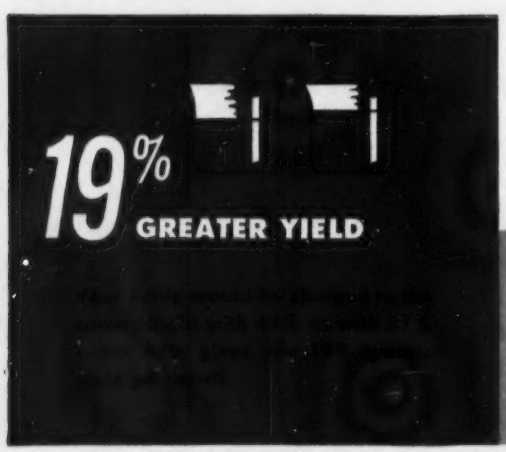

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NEWSLETTER

The St. Lawrence Seaway—now a virtual certainty—may well shift the nation's chemical center of gravity. After 1960, when the first ships should be passing through the new system, the distribution pattern of Great Lakes and coastal chemical process plants will be markedly affected. Buffalo, Cleveland, possibly Chicago and dozens of other inland cities will be accessible to tankers and freighters not only from overseas but also from U. S. coastal ports.

It probably won't be long before the project is started. Initial contracts for lock excavation on the U. S. portion could be advertised for bids by late next fall, provided all legal hurdles and administrative procedures are cleared in time—which appears likely.

On the basis of Congressional committee reports, there's no doubt that Army engineers will handle the job. And the last legal obstacle to joint Seaway-power development of the St. Lawrence is expected to be out of the way by June. The U. S. Supreme Court is almost sure to turn down, before its summer recess, any petition that may be filed by dissenters to the Federal Power Commission license to the New York State Power Authority. The Seaway will then be in the clear to be tackled promptly by the Canadian government and the (U. S.) St. Lawrence Seaway Development Corp.

•

Also of international import is the decision of Interhandel, Swiss holding company that owns the majority of General Aniline & Film stock, to cancel its agreement to sell GAF—when and if legally possible—to Blair Holdings Corp.

Interhandel still proposes to sell GAF to American interests, will continue to negotiate for a satisfactory arrangement.

•

Petrochemicals are the apple of many a company's eye:

It won't be too surprising to see Jefferson Lake Sulphur, for example, get into the field. It has an option, in return for financial and technical assistance, to buy a majority interest in Merichem Co., Houston, which is recovering cresylic acid from refinery wastes. "Our potential interest in this company would . . . strengthen our future growth in the petrochemical field," says Jefferson Lake.

And Equitable Gas, Pittsburgh, is working on petrochemical plans. Its original idea was to build a natural gas stripping plant—similar to National Petro-Chemical's Tuscola, Ill., installation—near Ashland, Ky. Changing business conditions and shifts in the petrochemical market situation have forced delay and reconsideration, but some plan is likely to be worked out within the next few weeks.

•

Sulfur is "produced," whether it is mined from the ground or recovered from natural gas. So ruled the Court of Civil Appeals at Austin, Tex., in a suit whereby Phillips Chemical sought to recover taxes paid under protest on gas-derived sulfur output. Phillips and eight other firms have paid $261,947 since mid-'51 on about 190,000 long tons of sulfur.

In reversing the trial court decision, the appeals court argued that the legislature, which framed the law before recovery of sulfur from natural

gas was commonplace, "without doubt . . . intended to tax the production of all sulfur irrespective of the manner by which production was accomplished."

Next anticipated step: appeal to the state supreme court.

•

Louisiana, too, is running into tax troubles. Since 1940 the state has been collecting 1¢/1,000 cu. ft. gathering tax on natural gas, which brings in about $11 million/year. Just before the legislature convened this week to consider boosting the levy, Louisiana Nevada Gas Co. (Tulsa, Okla.) protested its payment, laying the groundwork for a legal test of the assessment.

•

Late next year the Pacific Northwest may have its own ammonia, urea and ammonium sulfate. Plans are moving ahead whereby Fluor Corp. (Los Angeles) will design process and plant for Columbia River Chemicals, Inc., an affiliate of Pacific Chemicals, Ltd., of Calgary, Alberta. The $11.5-million plant will go up on the Columbia River near Pasco, Wash.

Designed to operate on either fuel oil or natural gas—if and when the latter is available—the plant will turn out 160 ton/day of anhydrous ammonia, 110 tons of urea, and 140 tons of ammonium sulfate.

Natural gas is still the big "if." Hearings are now in progress before the Federal Power Commission, and on their outcome hinges the availability of gas in that area—and that, in turn, will chiefly govern the economics of ammonia production.

•

But already in production is Allied Chemical's ammonia plant at La Platte, Neb., and urea manufacture may begin in three or four weeks.

Northern Natural Gas Co. now supplies 12 million cu. ft./day on an interruptible basis, will apply to the FPC this month for permission to supply Allied with an additional 12 million cu. ft. on a firm basis.

•

Shale oil industry for Colorado? It would take a lot of electric power, and it's significant that the Colorado Land Board has now leased 10,000 acres of state-owned coal lands to Utah Construction Co., which is interested in power as well as chemical potentialities of the deposits—only a relatively short distance from oil shale lands.

•

Biocatalytic sewage disposal aids have generated a lot of interest, but "efficacy of the products is still questioned by many"" (CW, April 17, p. 72). Latest to question is the California Sewage and Industrial Wastes Assn., which appointed a committee to look into them. The committee's findings:

- The desirable enzymes are normally present in sufficient concentration in well-designed plants.
- The biocatalytic additives may do some good, but carefully controlled experiments are needed to prove it.
- Many claims put forth by promoters of these materials "appear to be grossly overstated and misleading."

•

Another product of questioned efficacy has been granted a short reprieve. The Federal Trade Commission was scheduled to begin a hearing this week on its complaint that the controversial battery additive AD-X2 has been falsely and misleadingly advertised. FTC has now asked for postponement until June 14.

. . . The Editors

Chemical progress in combating corrosion has been advanced considerably with Polyrad®. This filming amine inhibitor reduces corrosion in producing wells and refineries. Polyrad and other amine derivatives improve efficiency of secondary recovery operations. And Hercules® explosives aid in laying pipe lines.

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CHEMICAL PROGRESS WEEK-MAY 9-15

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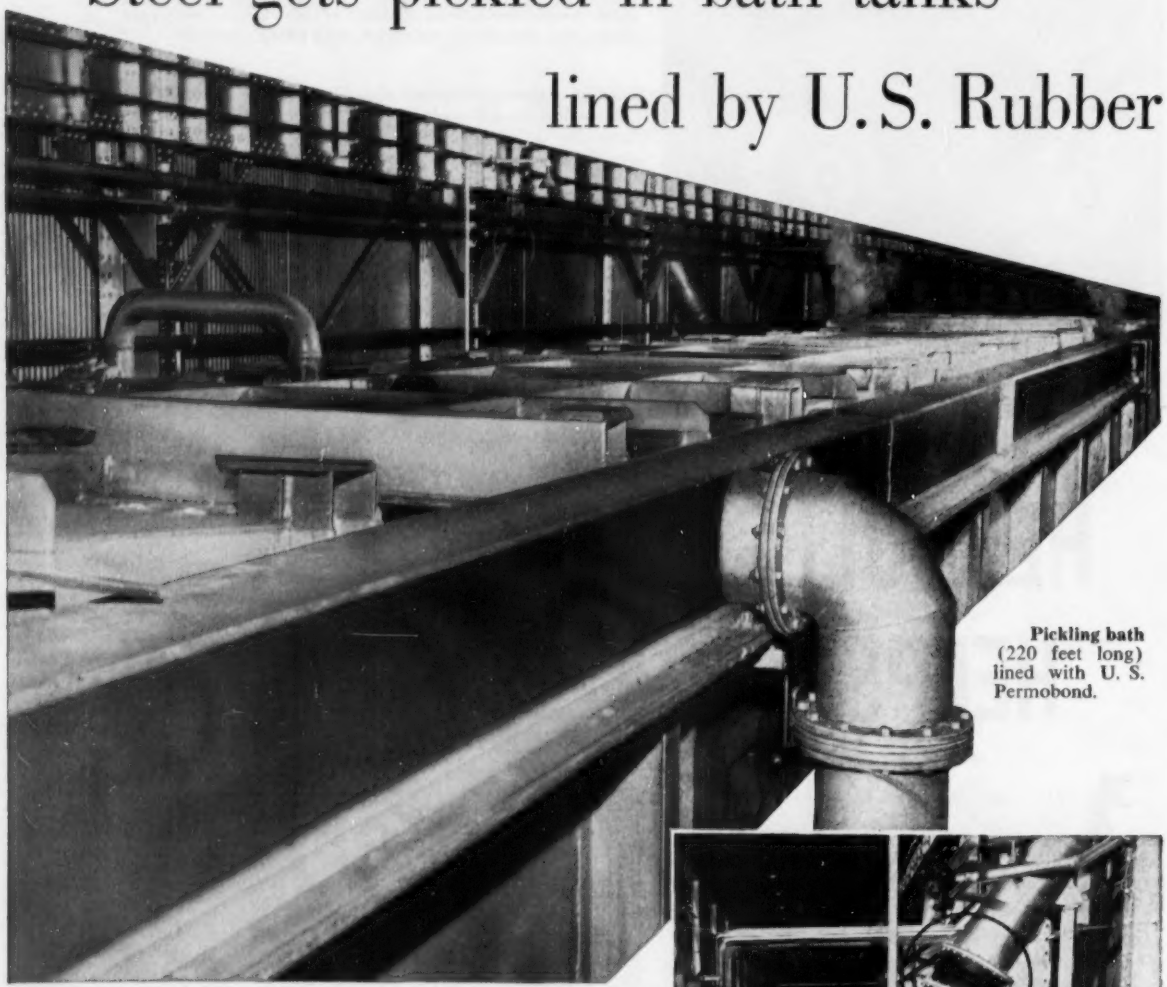
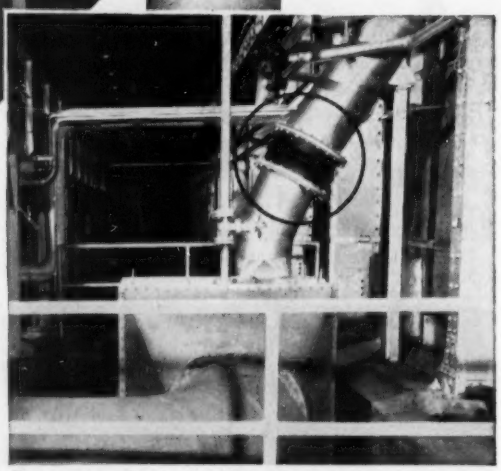


Pickling bath (220 feet long) lined with U. S. Permobond.



Duct system lined with U. S. Permobond conveying sulphuric acid fumes to outside of plant. Note U. S. Expansion Joint at right.

Many steel plants handle the hot corrosive acids used in pickling operations by means of tanks lined with Permobond, a product made and installed by United States Rubber Company. Without this rubber, the hot acids would "eat" and corrode the metal tanks.

Typical is this large Midwestern steel plant. The complete pickling unit, acid bath tanks and covers, rinse tanks, fume exhaust system, including a large stack, are all "Permobond-protected."

This steel plant also uses U. S. Expansion Joints to counteract expansion and contraction in pipe lines forming the duct system. And to provide flexibility, U. S. Pilot Flexible Pipe is used in the downcomers.

The "U. S." complete engineering service which designed, accurately fabricated, and Permobond-lined the many complex weldments into a finished, efficient pickling line is available to all industry. Consult any of our 25 District Sales Offices or write to address below.

"U. S." Research perfects it.
"U. S." Production builds it.
U. S. Industry depends on it.

UNITED STATES RUBBER COMPANY
MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Hose • Belting • Expansion Joints • Rubber-to-metal Products • Oil Field Specialties • Plastic Pipe and Fittings • Grinding Wheels • Packings • Tapes Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting

BUSINESS & INDUSTRY. . . .

PROTAGONISTS: Lawyers Kenney and Baker are opponents in TCP title battle.

Tussle Over TCP

All the extra pep that tricresyl phosphate is said to put into gasoline barely matches the energy that's going into the struggle over how this new additive should be marketed. Latest phases of the battle:

• A campaign, undertaken by Shell through nationwide advertising, to persuade motorists that it's much safer and surer to buy gasoline containing TCP than to purchase the compound separately and add it to regular gasoline.

• A lawsuit, expected to start this month, in which Shell will seek to stop American TCP Corp. from using the letters TCP to designate its product. Shell will charge unfair competition and infringement of its own use of TCP as a product designation.

Attorneys for Shell, headed by general counsel William Kenney, point out that American TCP Corp. has been refused a license, and that Shell has registered the letters TCP in 48 states, also has applied to the U.S. Patent Office for registration of TCP as a trade mark. Shell denies that its application has been turned down by the Patent Office, insists that it's still pending.

President Leon Baker, who left his job as assistant general counsel of Celanese Corp. last December to organize American TCP Corp., counters by insisting that TCP is an abbreviation for the generic name, tricresyl phosphate, and that Shell should not be granted exclusive right to its use. He cites the widespread use of DOP for dioctyl phthalate, as well as DDT and TNT among others.

"Most motorists are unfamiliar with these chemical abbreviations," contends one Shell attorney, "and to them TCP doesn't mean tricresyl phosphate, it means Shell's gasoline additive." And he is quick to point out that TMP is Heyden's registered trade mark for trimethylolpropane and *dbpc* is Koppers' for di-tertiary butyl para-cresol.

Shell also feels that distributing TCP concentrate in cans for motorists themselves to add to gasoline is at least potentially hazardous. Tetraethyl lead, for example, is never added by motorists. Both American TCP Corp. and Vickers Chemical, Ltd., another New York firm (not affiliated with the British Vickers), distribute their products in cans. Vickers calls its additive Hi-Test *(CW, May 1, p. 64)*.

Although Shell Development Co. has applied for a patent on its mixture of tricresyl phosphate and gasoline, it has not yet been granted. Meantime, many oil companies are going ahead and putting tricresyl phosphate or other phosphorus compounds into their gasolines. Ethyl Corp. and Du Pont both manufacture additives for this purpose.

Chemical industry awaits the outcome of the battle between Shell and American TCP Corp. for: (1) a more clearcut precedent on use of initials of chemical compounds as trade names; and (2) a clarification on patenting a previously known compound as a new additive.

Not Hard, Not Easy

A well-behaved dollar is what the Eisenhower Administration wants as a means of continuing the present business upturn.

And this moderately "easy money" policy suits the chemical process industry just fine, it appears this week. On all sides, a close observer could spot signs and omens that foretell still more industry growth (*see also pp. 18, 52, 95*):

• Titanium pigment sales are booming, Canada's Society of Plastics Industry foresees over-all good business all this year, and potash deliveries during the first three months of 1954 were the greatest in total tonnage ever shipped by U.S. producers during any quarter.

• Du Pont will push cellophane production up by 25 million lbs./year, Allied's Nitrogen Div. is adding to its Hopewell (Va.) plant to increase ammonia production by 50,000 tons/year, and Monsanto's Organic Chemcals Div. will expand its Monsanto (Ill.) Krummrich works to double production of lubricating oil additives.

• Plans for new plants were revealed by Allied's Solvay Process Div., Mississippi River Fuel Corp., and Standard Oil of Calif.

These and other developments throughout the country have convinced the President's Council of Economic Advisors and the Board of Governors of the Federal Reserve System that money is now easy enough to meet industry's needs. The aim now is to keep from upsetting the present balance.

Accordingly, the money managers of Washington recently decided (1) to refrain from long-term borrowings that would make money "dearer" and (2) not to lower bank reserve requirements, which would make for "softer" money. Washington doesn't want to do anything that might delay a single construction project, large or small.

ATLAS' FRORER: Betting on American-style sales effort in Germany.

New Look In Expansion . . .

Convinced that the time is ripe for major investment in chemical facilities abroad, U.S. companies in increasing numbers are turning a major part of their current expansion effort to overseas projects. Their reasons are basically twofold: monetary problems in many soft-currency areas are making exporting hazardous; and European companies (aware that they're a decade behind in much developmental work) are now eager for cooperative ventures.

Latest U.S. company to join the ranks is Atlas Powder Co., which this week revealed the formation of a joint company—Atlas-Goldschmidt, G.m.b.H—to produce emulsifiers in Essen. Copartner is Th. Goldschmidt, A.-G., the first company in Germany to develop the commercial use of emulsifiers. "Both partners," says James Frorer (Atlas vice-president in charge of international operations), "will make their patents and trademarks available to the jointly owned company. Result: by June the fledgling company will have the largest line of emulsifiers in the world."

Stage Setters: The Atlas-Goldschmidt deal (like others of a similar nature) has been brewing for some years. Goldschmidt A.-G. has been manufacturing Atlas emulsifiers on a small scale for some time—to allow its customers to sample Atlas products and to work out its own manufacturing problems.

"Our decision was made," says Frorer, "when we realized the importance of the unexploited market for emulsifiers on the Continent." Comparatively little has as yet been accomplished in the field of emulsifiers in cosmetics or paints, and the fight over food emulsiers in the U.S. has served as an "appetite-whetter" to the food formulating class in Germany. "It's a simple case of getting into competition on a real scale now, or losing out to other U.S. producers."

One problem confronting Atlas and other U.S. companies going into production agreements is the pattern of sales in Europe today. Europeans, unaccustomed to the American system of development-research, find it difficult to cope with our lab-assistance techniques, stumble over methods of putting a product across—for application in other industries.

"We decided to tackle the problem," states Frorer, "before it became an issue of major proportions." Three research-development men (handpicked by Goldschmidt, A.-G. for employment in the company-to-be) were brought to the U.S. for training in the U.S. system. Now back in Germany, they'll assume key roles in getting the line of emulsifiers introduced to textile, insecticide, pharmaceutical producers. For Atlas, it means a complete release of all production and application information, "but company officials decided it was the only way to get a firm base in the expanding European market; the use of agents is a growing headache as currency problems mount."

From a capacity standpoint, the new plant in Essen won't be large by U.S. standards (some two-thirds the size of the Atlas plant now under construction at Memphis). But by German standards, it will be a construction of major importance. "Not only will it offer the widest range of emulsifiers in the world, but also it should quadruple present Goldschmidt-A.G. production."

Pattern Repeated: That's the same sort of pattern that's being repeated by U.S. firms in all sectors of the world this week. Bucking internal wrangles with foreign governments over money exchange, and feeling that foreign investment will pay handsome rewards, a number of firms are ushering in new facilities (*box, pg. 17*). Others, have signed cooperative-venture pacts, or finalized stock purchase arrangements. Included:

• Monsanto Chemical Co. will join with Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, to set up a jointly owned company to produce isocyanates (*CW, May 1, p. 26*). Initially, a plant will be constructed in the U.S. (to supply the U.S. market for rigid porous and flexible plastics), but industry observers are betting it won't be long before the jointly owned firm will be reaching out into production elsewhere. "The South American market is almost ready for such a venture," points out a prominent East Coast plastic fabricating executive. "Plastics men are wagering how long it will be before someone will get the idea rolling."

• Parke-Davis, meanwhile, has just opened a new manufacturing plant in Caracus, Venezuela. Initial production will be confined to a line of Parke-Davis liquid medicinals—but should be followed within six months by full production of a line of products.

• Food Machinery and Chemical Corp. has acquired controlling interest in Morris & Martin Ltd., Port Elizabeth, South Africa. According to FMC officials, plans call for initial construction of a plant to produce machinery for the South African pineapple canning industry, but eventually Food Machinery hopes to extend its interest to include a full range of its product line.

• Completion of a plant to produce paints in Manila, Philippine Islands, is scheduled for midsummer—as the joint undertaking of the National Lead Co. and Connell Brothers Co.,

of the Philippines. The concern will be called National Lead Co. (Philippines); all paints produced will be sold under the "Dutch Boy" trademark. Approval of Philippine authities was required for importation of necessary equipment, raw materials, and supplies—but company officials are convinced their venture will be well worth the effort expended. Reason: of all the world markets that offer the greatest potential growth—The Asian market is the most enticing. "If and when," (and all U. S. companies in area are quick to emphasize the when) "the Chinese continent is reopened for unrestricted trade, we want to be in position to move quickly."

• Half-way around the world, South African Cyanamid (PTY) Limited expects to complete construction of a calcium cyanamid plant at Witbank, South Africa, early in 1955. Now imported from the parent company in Canada (North American Cyanamid Ltd.), production of the basic raw material—for several sulfa drugs, melamine, acrylonitrile and picrite (a flashless propellant for explosives) will open up a range of possibilities for new industries in South Africa—is looked upon by the government "as the greatest single step toward advancement of the chemical industry in the Union in the past several decades." Immediate probability of export (in any considerable quantity) to other sectors of Africa seem slim; but the current rate of expansion in population in South Africa alone would seem market enough for Cyanamid's latest overseas venture.

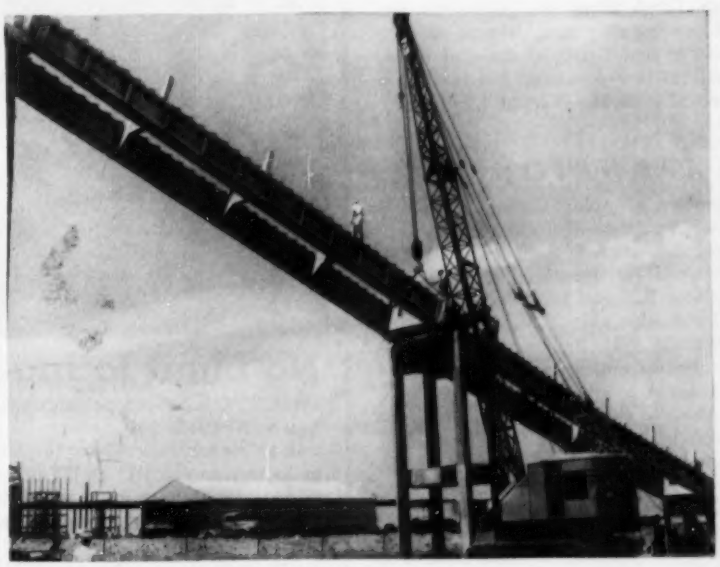
• Still in the role on consultant (but with a watchful eye on French plastics consumption) the Koppers Chemical Div. of Koppers Co. Inc. will cooperate with the Société Houilleres-Pechiney-Progil in building a polystyrene plant at Mazingarbe "within the next two years." The new plant is expected to have a rated capacity of 10,000-14,000 metric tons/year, hardly sufficient to satisfy current French imports of polystyrene. Observers note, therefore, that it shouldn't be long before "other U. S. companies get into the French plastics picture."

That the trend toward expansion abroad will gain in popularity with U. S. firms is a virtual certainty as long as the tangles over currency exchange involved in exporting continue. Admits one New York chemical executive: "We can't compete—exporting our products from the U. S. But the market's there—and if it means going into production abroad, it looks like the best move for us today."

. . . Investment Abroad

UNITED STATES investment in Europe and Africa—the answer to export problems in soft-currency areas—is showing up in major expansion projects this week. Heading the list: Esso A. G.'s (the German affiliate of Standard Oil Co. of New Jersey) $12-million oil refinery at Hamburg *(above)*. Featuring a catalytic cracking unit, Esso will triple its output of lubricants and asphalt.

Meanwhile in South Africa, Kellogg International Corp.'s (subsidiary of M. W. Kellogg Co.) is pushing completion of a gasoline-from-coal synthesis plant—due also to turn out 15 million gal. of industrial chemicals annually. The conveying system *(below)* is designed to carry 225 tons of coal per hour—from mine to hopper.



Entry Port Fizzling?

Hongkong, notorious as the major funnel for entry of chemicals from the West to Iron Curtain countries, may be losing its grip on East-West trade. The reason is twofold: purchasing power seems to be weakening in certain major importing countries, and Hongkong brokers (with stocks piling up) are becoming increasingly hard to sell on large shipments of materials from Western exporting nations.

Prime examples this week of the way trade through Hongkong is slackening:

• Red China—which normally absorbs nearly all of the ammonium sulfate sold in Hongkong—is pushing its policy of ordering bulk shipments direct to China. The move is forcing Hongkong holders of ammonium sulfate stocks to liquidate at a loss. Result: Belgian, Dutch, British producers (who formerly sold over 85% of the ammonium sulfate shipped into the British Crown Colony) are looking around for new markets of a steadier nature.

• At the beginning of 1954, demand for industrial chemicals from China and South Korea was keen, but the trend started to weaken in March, has now virtually collapsed. Adding to the problem: though demand for industrial chemicals of all kinds is still robust in Taiwan, Siam and Burma, purchasing power is weak, and Hongkong merchants (forewarned by the ammonium sulfate fiasco) are loath to count on much import of materials this year.

If and when certain other chemicals are lifted from the embargo list, Hongkong may again regain its position as major port of entry of chemicals to Red countries, but right now its star is on the descent.

EXPANSION . . .

Isophthalic Acid: Oronite Chemical Co. (Standard of California subsidiary) has started engineering studies required for construction of its 15-million lb./year isophthalic plant at Richmond, Calif. (*CW Market Letter, Sept. 19, '53*). Preparation of the site is already under way; completion of the plant is scheduled for mid-1955. Although the principal market for isophthalic is currently in the East, Standard elected to build its plant at Richmond because of capital cost advantages derived from integration with its existing refinery and petrochemical facilities. A major portion of the output will be shipped to New Jersey by water, where Oronite is building a storage and distributing terminal.

•

Ammonia: Atlantic Refining Co. is expected to begin production at its new ammonia facilities in Philadelphia by early June.

•

Ammonia: Allied Chemical & Dye Corp.'s Nitrogen Div. will increase production of ammonia at its Hopewell, Va., plant by 50,000 tons/year. The new project involves changes in equipment as well as installation of some new facilities.

COMPANIES . . . .

Another company incorporation:

Service Supply & Chemical Co., Inc. has been formed in Sheboygan, Wis., with an authorized capital of 1,250 shares of common stock, no par value.

•

More first quarter earnings reports:

• Eli Lilly and Co.'s consolidated net sales totaled $31.6 million for the first quarter, a decrease of 8.8%; but net income was $3.3 million, an increase of 23.7% over 1953. Main reason for the increase, company officials say, is the sharp change in the foreign exchange situation. Last year Lilly suffered significant losses as a result of the devaluation of Brazilian currency; this year's losses are comparatively small.

• Spencer Chemical Co. registered a 8.4% sales increase—from $9.4 million in the March quarter last year to $10.2 this year—but net (after taxes) dropped off 7.3%—from $1.6 million to $1.5 million. Major factor reducing net: a nonrecurring $900,000 expense, the bulk of which involved preoperating expenses at the company's new Vicksburg, Miss., plant.

• Stauffer Chemical Co. reports both sales and net profits up in the March quarter this year. Sales were $18.0 million (compared with $17.5 million in '53); net profits were $1.2 million (as opposed to $1.0 million). Charges for depreciation and amortization were 33% greater, and provision for federal income taxes was 8% less in the first quarter than in the same period in '53.

• Pittsburgh Plate Glass Co. is booking a 13% decline in sales and a 25% drop in net income for the first quarter. Sales were $98.1 million (as against $113.1 million); net profits were $7.1 million (as opposed to $9.5 million in the comparable quarter last year).

WIDE WORLD

No Limit to Ingenuity

WHEN U. S. troops occupied Japan in 1945, the helmet liner was, to the Japanese, merely a plastic contrivance used by "Yankee soldiers to afford a more comfortable fit." But the ingenious Japanese soon discovered that the liners (when worn alone) make admirable toppers for coal miners, National Security forces (Japan's embryo army), policemen, boat racing enthusiasts, military band members. Result: today in Japan several small plants turn out glass-polyester-resin liners—for dozens of purposes.

TONNAGE MOLYBDENUM CHEMICALS

To Precise Specifications

AMMONIUM MOLYBDATE, REAGENT

$(NH_4)_6Mo_7O_{24}.4H_2O$ F.W. 1235.95

Meets A.C.S. Specifications

Assay (as MoO_3)	81.0-83.0%
Insoluble Matter	0.005 % Max.
Chloride (Cl)	0.001 % Max.
Nitrate (NO_3)	0.003 % Max.
Phosphate (PO_4)	0.0005 % Max.
Sulfate (SO_4)	0.005 % Max.
Heavy Metals (as Pb)	0.001 % Max.
Magnesium and Allied Cations	0.020 % Max.
pH of 5% Solution at 25°C	5.0-5.5

Particle Size (Mesh): at least 95% thru U.S. No. 20 Sieve
at least 90% on U.S. No. 140 Sieve

AMMONIUM MOLYBDATE, C.P.

$(NH_4)_6Mo_7O_{24}.4H_2O$ F.W. 1235.95

Assay (as MoO_3)	81.0-83.0%
Insoluble Matter	0.010 % Max.
Chloride (Cl)	0.005 % Max.
Nitrate (NO_3)	0.010 % Max.
Phosphate (PO_4)	0.001 % Max.
Sulfate (SO_4)	0.010 % Max.
Heavy Metals (as Pb)	0.003 % Max.
pH of 5% Solution at 25°C	5.0-5.5

Particle Size (Mesh): at least 95% thru U.S. No. 20 Sieve
at least 90% on U.S. No. 140 Sieve

SODIUM MOLYBDATE, TECHNICAL

Na_2MoO_4 F.W. 205.94

Assay (Na_2MoO_4)	98.0 % Min.
Insoluble Matter	0.050% Max.
Chloride (Cl)	0.20 % Max.
Sulfate (SO_4)	0.20 % Max.
pH of 5% Solution at 25°C	9.0-10.0

MOLYBDIC ACID, REAGENT

Meets A.C.S. Specifications

Assay (as MoO_3)	85.0 % Min.
Insoluble in NH_4OH	0.010 % Max.
Chloride (Cl)	0.002 % Max.
Phosphate (PO_4)	0.0005% Max.
Sulfate (SO_4)	0.020 % Max.
Heavy Metals (as Pb)	0.003 % Max.

Particle Size (Mesh): at least 99% thru U.S. No. 40 Sieve
at least 10% thru U.S. No. 325 Sieve

MOLYBDENUM TRIOXIDE, REAGENT

MoO_3 F.W. 143.95

Meets A.C.S. Specifications

Assay (MoO_3)	99.5 % Min.
Insoluble in NH_4OH	0.010 % Max.
Chloride (Cl)	0.002 % Max.
Nitrate (NO_3)	0.003 % Max.
Phosphate (PO_4)	0.0005% Max.
Sulfate (SO_4)	0.020 % Max.
Ammonium (NH_4)	0.001 % Max.
Heavy Metals (as Pb)	0.005 % Max.

Particle Size (Mesh): at least 99% thru U.S. No. 40 Sieve
at least 10% thru U.S. No. 325 Sieve

USES

Molybdenum compounds are widely used in the production of catalysts, phosphomolybdic-phosphotungstic lake colors, molybdate chrome orange pigments, protective and decorative metal finishes, soil additives, and pure molybdenum metal for radio tubes, X-ray tubes, and incandescent lamps. They have specific uses in pharmaceutical, leather and textile manufacture.

All Baker Molybdenum Chemicals are produced under processing conditions that insure physical and chemical uniformity.

Technical product data, samples, and prices will gladly be forwarded upon request.

Address your letter to J. T. Baker Chemical Co., *Executive Offices,* Phillipsburg, New Jersey.

Baker CHEMICAL

Baker Chemicals

REAGENT • FINE • INDUSTRIAL

Plants in Politics: Month for Decision

UNCLE SAM'S CHEMICAL EMPIRE

Products of Plant	Location	Cost	Status and Outlook
Alumina	Laramie, Wyo.	$7,500,000	May be sold or leased.
Ammonia	Dumas, Tex.		Leased by Phillips Chemical.
Ammonia	Louisiana, Mo.		Recently leased to Hercules.
Ammonia	San Jacinto, Tex.		Leased to San Jacinto Chemical.
Ammonia, methanol, hexamine and ethylene urea	Morgantown, W. Va.		Leased to Mathieson Chemical.
Ammonium picrate	Little Rock, Ark.		Inactive.
Calcium carbide	Ashtabula, O.	3,200,000	GSA will accept sale bids.
Caustic, chlorine	Lake Charles, La.	21,400,000	Leased to Columbia-Southern.
Chlorine, caustic	Muscle Shoals, Ala.	23,000,000	Offered for sale or lease.
Classified materials	Terre Haute, Ind.		Inactive; plant leased by Pfizer for antibiotics, vitamins.
Ethanol (fermentation process)	Omaha, Neb.	6,200,000	Inactive; storage tanks leased.
Ethanol (from wood)	Springfield, Ore.	3,100,000	Inactive. GSA will re-advertise for bids.
Hydrogen peroxide	Dresden, N. Y.		Leased to Du Pont.
Magnesium	Canaan, Conn.	5,000,000	Leased to AEC, which subleases to New England Lime for production of calcium and magnesium for AEC.
Magnesium	Freeport, Tex.		Sold to Dow Chemical, with national security clause effective to Sept. 15, '54.
Magnesium	Luckey, O.	4,300,000	60% of plant leased to AEC for beryllium production, contract renewable to 1964. Magnesium facilities to remain.
Magnesium	Manteca, Calif.	5,800,000	Will be used for titanium production by Western Pyromet.
Magnesium	Painesville, O.	36,000,000	Being mothballed by Diamond Magnesium Corp.
Magnesium	Spokane, Wash.	17,000,000	95% of plant leased until 1963 to Pacific Northwest Alloys for ferrochrome production. Lessee may renew lease or purchase.
Magnesium	Velasco, Tex.	26,500,000	Operated for GSA by Dow; most of production goes into government stockpile.
Magnesium	Wingdale, N. Y.	6,000,000	Inactive.
Nickel oxide	Nicaro, Oriente, Cuba	32,000,000	Operated for GSA by National Lead Co. subsidiary.
Oleum, powder	Rosemount, Minn.	10,000,000	Inactive. Major part of original installation sold to Univ. of Minn. with modified national security clause.
Oxygen	Gloucester, N. J.	228,000	Leased on yearly renewable basis to Air Reduction Sales.
Oxygen	Rochester, N. Y.		Leased on monthly basis to Air Reduction Sales Co. GSA plans to ask sale bids.
Pentolite, TNT, DNT	Sandusky, O.	31,400,000	Inactive.
TNT	Meadville, Pa.	31,000,000	Inactive. Oleum facilities in original installation sold to General Chemical Div., Allied Chemical & Dye.
TNT, DNT	Weldon Spring, Mo.	10,400,000	Part sold without security clause; part transferred to Univ. of Mo.; manufacturing facilities inactive.
TNT, DNT, Powder	Millington, Tenn.		All equipment removed from site. Purchaser, Hamilton Stewart Co., signed a modified national security clause on 500 acres.
TNT, DPA, DMR, powder	Pryor, Okla.	31,000,000	Manufacturing facilities inactive. Power and water facilities sold; minor leases bring in $26,000/year.
TNT, Tetryl	Sylacauga, Ala.		Inactive.
Weapon chemicals, such as hexachlorethane	New Martinsville, W. Va.		Inactive.

For the Eisenhower Administration's effort to get the federal government out of competition with private industry, this is a crucial month.

There are several significant aspects: Success or failure of the program for selling the 27 synthetic rubber plants to private firms will depend on the bids received up to the May 27 deadline. Also, the General Services Administration—which has charge of most of the other federally owned chemical plants—is soliciting bids this month on plants making calcium carbide, chlorine and caustic, alcohol, and oxygen. And finally, this always-hot subject of government-industry competition was fired up again last week when a report to the House committee on government operations slapped the Navy's attempt to justify its paint-making operations on the basis of need for quality control.

Reluctant to Quit: The committee is inclined to view those operations as a flagrant example of industrial-type operation by the government, even though Navy paint output has been halved to 3.1 million gal./year since 1952 by dropping production of all except 28 special high-volume paints. Too, the committee looks critically at a Navy-computed comparison of production costs of a phenolic-base antifouling paint, using Navy figures (on a million-gallon volume) against a quotation on a similar industrial paint in retail lots.

In general, most government officials say they want industry to take such operations off their hands; but the Navy's Bureau of Ships wants to continue with its paint making. The bureau contends that this work meets all the criteria set by the Dept. of Defense for such activities:

- Results in substantial savings to the government.
- Private facilities not reasonably available.
- Reserve capacity beyond existing industrial level is deemed necessary for mobilization purposes.

Costs Overcounted: Replying to a charge that these criteria are "nebulous," Charles Thomas—then Asst. Secretary of Defense for supply and logistics—asked the committee to accept "that the intent and desire of this new Administration and the Dept. of Defense is to get out of industrial and commercial activities."

An activity that has been part of the military establishment, and that can save a substantial amount of

DOW

IMPORTANT INTERMEDIATE BY DOW USED TO MAKE BETTER DYESTUFFS

Manufacturers of pharmaceuticals, too, rely on the high quality of DOW 3-methyl-1-phenyl-5-pyrazolone

PROPERTIES

White to slightly yellow powder
Boiling point at 17 mm. Hg ..... 191°C.
Melting point ..... 128.9°C.
Molecular weight 174.2

3-Methyl-1-phenyl-5-pyrazolone is an important chemical intermediate to manufacturers of pyrazolone type dyestuffs. And in the preparation of fine pharmaceuticals, too, this chemical has gained equal importance as an intermediate.

To you and to all present and potential users of 3-methyl-1-phenyl-5-pyrazolone, uniform quality is important for production control and a successful end product. Years of experience, research and extensive production facilities at Dow enable us to provide chemical intermediates on which you can depend for uniformity, quality and availability.

For your own evaluation of 3-methyl-1-phenyl-5-pyrazolone, we will be glad to send you an experimental sample. Write to THE DOW CHEMICAL COMPANY, Midland, Michigan, *Dept. FC 1642 B.*

you can depend on DOW CHEMICALS

DOW

money, Thomas went on, would probably be justified, from the taxpayers' standpoint.

"Our policy is to get all the costs on the high side, if anything. Then if you stay in it, there has to be a very valid reason for doing it."

With Strings Attached: While most officials concerned assert that they are eager to part with the plants they're accountable for, the terms on which the government will offer its facilities for sale are not always acceptable to industry.

Many plants—like those for magnesium and munitions (*see chart*)—are sold with a national security clause under which a purchaser usually must agree to refit the plant to produce its mobilization product in time of emergency.

Or take the Army's Muscle Shoals complex, one unit of which can make chlorine and caustic, and an interconnected unit operated by Tennessee Valley Authority is set up to make "phosphate"—which in this case means a nerve gas for chemical warfare. The chlorine plant, built for the Army by Monsanto, is up for sale or lease, with an option to the Army to recapture production when necessary. Some industry sources feel that, since most chlorine is sold on an annual contract basis, no company would dare to make a realistic bid for this plant under the shadow of that "recapture" clause. On the other hand, many would argue that such fears can be discounted because there's small chance the U.S. would ever need to operate the phosphate facilities on a large scale.

Another point on which government and industry are often at odds is on lease vs sale. Many industrialists have charged that companies operating plants leased from the government are, in effect, using government capital. Federal officials like GSA Administrator Edmund Mansure answer that they always try to get a rental high enough to compensate for capital costs.

Also on the firing line this month and every month are the plants operated by TVA; the Texas City tin smelter, and the stock of General Aniline & Film (still held by the government even though all parties want the company to be sold to U.S. citizens as soon as possible).

And there might well be even more instances of governmental operations in the chemical process field that have not as yet been spotlighted. A special office has been set up by the Business & Defense Services Administration to evaluate new complaints on this score.

AT TEXAS PARLEY: Presidents of sponsoring organizations* point toward . . .

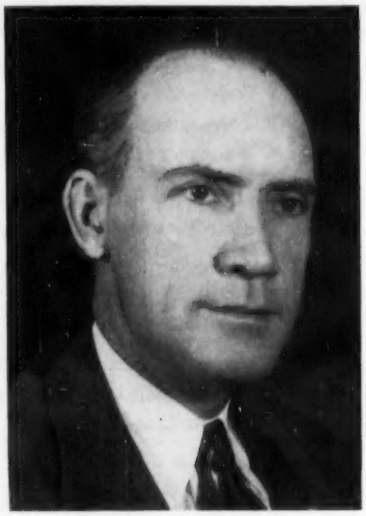
Self-policing on Pollution

More specific and more imperative than ever comes advice for industry to act on its own initiative in the field of pollution control before it has to act under compulsion. In particular, say specialists on the subject, chemical companies should adopt well-defined policies and positive programs.

Such was the tenor of principal speeches at the recent industrial wastes conference in Houston and at the 47th annual meeting of the Air Pollution Control Assn. last week in Chattanooga, Tenn. The latter group chose as its new president Gordon Larson, director of the Los Angeles Air Pollution Control District.

Dollar-and-cents importance of the problem was stressed by research director William Rand of Stanford Research Institute, who told of one large corporation that "has spent about $10 million over the past five years" on air pollution abatement equipment at several of the company's many plants. In the next 10 or 15 years, Rand predicted, this firm probably will have to spend at least another $20 million on remedial measures. There would undoubtedly be considerable waste if those expenditures have to be made under extreme pressure, he pointed out, suggesting that the company allot possibly $150,000 to obtain information that would help the management find the most efficient and economic ways of meeting future pollution problems. He suggested that in large corporations whose air pollution problems have become particularly complex, there are advantages to be gained in creating a position for an air pollution expert "to spot potential trouble before it becomes severe."

State control agencies, observed W. J. Cutbirth, Jr., of the Texas Game & Fish Commission, are handicapped by lack of funds and trained personnel, and must of necessity depend on the cooperation of all water consumers. He reported with satisfaction that "industry, to some extent, has become self-policing."



SMOG FIGHTER LARSON: For Los Angeles official, new national recognition.

* A. P. Black, Southern Assn. of Science & Industry; William Foster, Manufacturing Chemists' Assn.; and John Harper, Texas Chemical Council.

CSC makes more METHANOL

With the recent opening of the valves of the newly completed $20 million facilities at Sterlington, Louisiana, Commercial Solvents Corporation becomes one of the world's largest producers of methanol, for sale to meet the growing needs of expanding American Industry.

For steady, dependable large-volume supply of methanol, CSC is your logical source.

High-quality CSC methanol, produced from natural gas, is being supplied at a minimum purity of 99.85% in tanker, barge, tank car, tank truck and drums to all parts of the United States from conveniently located bulk and distribution points. For further information contact the Industrial Chemicals Sales Dept., Commercial Solvents Corporation, 260 Madison Ave., New York, N. Y.

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McGRAW-HILL

COMBINING technical training with labor union zeal, ESA leaders* urge . . .

Solidarity for Scientists

Older, wiser, wealthier and more militant—that's the Engineers & Scientists of America this week as that not yet two-year-old federation prepares to undertake more of a man's role in this nation's technical and industrial economy.

On a budget estimated at somewhat more than $200,000 for the 12 months beginning July 1, ESA will strive to accomplish big things along these five main lines:

- To improve employment conditions for engineers and scientists.
- To bring into ESA "those few engineering and scientific groups that are organized as bargaining units without ESA affiliation."
- To assist in formation of collective bargaining groups for engineers and scientists not yet unionized.
- To counteract "anti-ESA propaganda . . . from those pseudo-engineering societies that are in reality management sounding boards."
- To "extend our legislative coverage to the point where we are at all times aware of legislative items that might affect us . . . and where we are at all times ready to take any appropriate action."

* Back row, left to right, executive committee members George Drew, Michael Byrnes, Thomas Arntsen, Arthur Marin, Benton Dana, Ervin Spindel; seated, left to right, Treas. William Bencan, Secy. George Stosskopf, Pres. Joseph Amann, Vice-Pres. John Taft.

McGRAW-HILL

ILLINOIS' ORTH: At second convention, a modest force for unity.

McGRAW-HILL

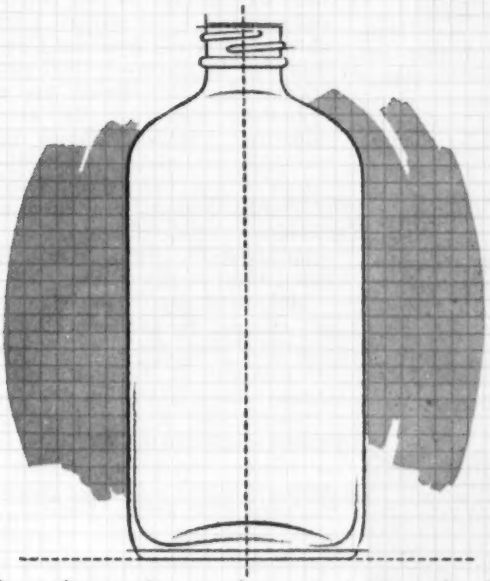
MINNESOTA'S AMANN: His aim, to disappoint those awaiting ESA's death.

Although ESA's approximately 40,000 members are all salaried employees of large industrial firms and nearly all hold one or more college degrees apiece, they are not the least bit bashful about calling themselves "union members." The federation's ultimate aim is to represent all employed engineers and scientists at big plants.

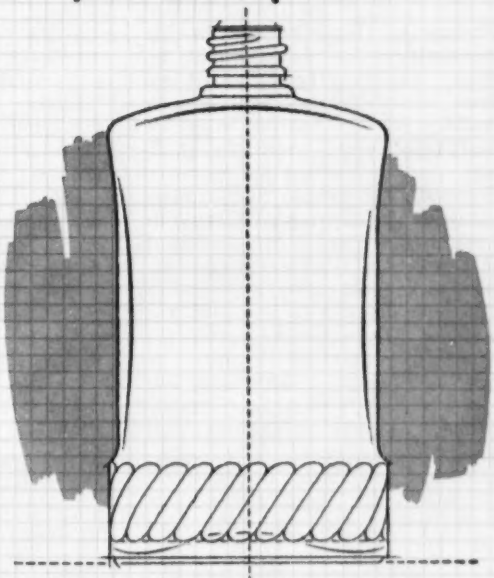
In order to achieve all those goals, delegates to the ESA's second annual convention agreed to the executive committee's recommendations that individual dues — now $4/year—be raised to $6 starting July 1; that ESA's national officers be placed on full-time salary basis; and that new headquarters be opened in Washington, D.C., by autumn.

Joseph Amann—whose unanimous re-election came about when Albert Orth of the Council of Western Electric Technical Employees withdrew his own nomination and threw his support to Amann—called on the association to maintain standards worthy of its members' professions: "We must at all times be certain that our utterances are supported by facts. We must never pretend to be something other than what we are. We must at all times abide by the agreements into which we enter with our employers."

Which one is the SALESpackage?



Is it the package where product protection is the dominant consideration?



Or the package of high style and distinctiveness?

Or the package with advantages for the retailer, or in actual consumption?

The answer has to be: ALL of them

But few product problems fall into one exclusive category.

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Twofold Approach

Fanning out from its base in fine chemicals for the pharmaceutical industry, small but aggressive Chemo Puro Manufacturing Corp. is now reaching into new markets in animal feed supplements, veterinary products, other agricultural and industrial chemicals. The company, which turns out some 300 different products in its Long Island City, N.Y., plant, last year grossed $1.6 million in sales, expects to go to $2 million this year.

The new move is in line with the business philosophy Chemo Puro has adopted: instead of engaging in head-on competition with older and larger rivals, it intends to become a custom producer of offbeat chemicals that command a premium (Chemo Puro has put a floor under the price of any chemical it will produce, won't make anything that sells for less than 50¢/lb.). And branching out from pharmaceutical chemicals into agricultural and industrial products is the logical and most economical way to diversify.

In capsule, here's how Peter Hereld, executive vice-president, characterizes the company's plan: "It's a twofold approach. First, we try to find new uses for our present products. Second, we try to combine our present raw materials in different ways to come up with new products. This makes it possible for us to purchase raw materials in greater volume, hence cheaper."

Uncovering New Uses: Betaine is one example of how Chemo Puro exploits new uses for a product. First sold as a lipotropic agent for humans, betaine is now replacing choline in poultry feed. And betaine hydrochloride is being used in industry as an HCl donor (crystals of it can replace hydrochloric acid in the curing of urea resins). In the manufacture of cans, betaine hydrochloride likewise acts as an HCl donor, forming tin chloride to improve the tin-steel bond.

Last year, Chemo Puro turned out less than 10 tons of synthetic betaine, expects to up that fourfold this year. Price: slightly over $2/lb.

There's another obvious advantage in selling to the nutritional and veterinary chemicals trade. By making some pharmaceuticals a little less pure, they can be sold for far less and to a broader market. Medicinal choline, for instance, sells for $1.50/lb., while feed-grade sells for only 57¢. Other products for the same market: salts of propionic and para-amino benzoic acids, and thyroprotein—an iodized casein that acts as thyroid-active hormone for cows.

Another instance: ferrous gluconate, originally sold as a remedy for human anemia, is now used in finely dispersed form as a pigment in ceramics. (Vitro Corp. uses ferrous gluconate in baked tile, where it deposits a special form of iron oxide or metallic iron if the tile is exposed to a hydrogen-reducing atmosphere.)

Juggling Raw Materials: The second aspect of the twofold approach to diversification is the effort to utilize the same raw materials for many different end products. "This," says Hereld, "enables us to buy raw materials by tank car."

HERELD: For a small chemical concern, diversifying takes deftness.

Thus trimethylamine, which at present is reacted with ethylene chlorhydrin to produce choline, can also be combined with hydrochloric acid to make trimethylamine hydrochloride, with a potential use as a rodent repellent.

Developing a use for acetyl thiohydantoin as a brightening agent in silver and chromium plating likewise exemplifies this method of diversification. Udylite Corp., a large metal plater, is now consuming pilot quantities in its Detroit plant. Acetyl hydantoin is made by reacting acetic anhydride, ammonium thiocyanate and aminoacetic acid—all are raw materials the company uses in making other items.

In addition to diversifying, Chemo Puro has stepped up its custom manufacturing of special chemicals for other companies. A producer of such lithium salts as the benzoate and salicylate, it recently got a long-distance hurry call from the Electric Boat Co. for extremely high-purity lithium chromate needed for the hydrostatic testing of the atomic submarine *Nautilus*. Chemo Puro was able, according to Hereld, to "knock it out overnight." It also produces a number of other custom chemicals, mostly fine organics, to supplement its principal manufacturing effort in pharmaceuticals.

Little But Lusty: From a variety of raw materials the company turns out some 300 products for its 600 present customers in the drug industry. Output: half a million lbs. per year.

Salicylamide, a pain killer that competes with aspirin, is the biggest in volume, dipyrine the highest in price ($10/lb.). Other principal products: choline salts, betaine, calcium levulinate, ferrous gluconate, mephenesin, piperazine, terpin hydrate and zinc undecylenate.

Still little more than a lusty stripling, Chemo Puro today is flexing for further expansion. Peter Hereld, anticipating an early move into a larger plant (most likely in New Jersey), looks forward to increasing sales of agricultural, industrial products as dividend of diversification.

LABOR

Joust on Jobs: Chemical companies are trying to be particularly discreet about announcing changed employment levels this week. Current political and employment factors combine to form an explosive mixture that makes every little spark of news about jobs flare up out of all proportion to what its significance would be in normal times.

Recent examples involving chemical process companies:

- Promulgation of a project that will mean more jobs will get extremely favorable reception; witness the way that Ohio and West Virginia people welcomed Union Carbide's disclosure that work will begin this month on construction of a $13-million silicone manufacturing plant for its Linde Air Products division at Long Reach, W. Va., near present plants of two other Carbide divisions, Bakelite and Electro Metallurgical.
- Word that employees will be laid off comes as an especially bitter blow to any community, like the announcement by Joseph Bancroft & Sons Co. of Rockford, Del., that it would lay off—for one week—about 700 of the 1,230 employees at its

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SPOTLIGHT SEIZERS:* In unemployment publicity contest, they eclipse AFL, CIO.

dyestuffs plant because of lack of orders.

All of the three major labor unions in the chemical industry are emphasizing the increase in unemployment over the past winter, making this a sensitive subject in every unionized chemical plant.

And union leaders are scrambling to out-do each other in trying to cope with the situation. After CIO Pres. Walter Reuther announced that his organization would hold a conference in Washington this week on the unemployment situation, three rival union chieftains staged a dramatic meeting that grabbed headlines from coast to coast. Members of this dissident triumvirate: CIO Steelworkers' David McDonald, who's been at odds with Reuther; AFL Teamsters' Dave Beck, who's had friction lately with AFL Pres. George Meany; and United Mine Workers' John L. Lewis, a foe of both Reuther and Meany. They pledged to seek ways of providing "mutual assistance."

The U. S. Dept. of Labor also is looking for ways to combat unemployment. One possible method being considered: hiring of industrial workers on a semiannual or quarterly basis, instead of by the hour.

•

New Chemical Locals: Three labor organizations report membership gains in recent representation elections at U.S. and Canadian chemical plants:

• Oil Workers International Union (CIO) won bargaining rights at the Canadian Chemical plant in Edmonton, Alberta, by a vote of 205 to 44 and at the Monsanto plant at Avon, Calif., by a margin of 46 to 27.

• At the Standard Oil Plant in Whiting, Ind., a group of inspection, field and industrial engineers chose to be represented by the Research & Engineering Professional Employees Assn., which is affiliated with Engineers & Scientists of America. There were 50 ballots for REPEA, 18 for Central States Petroleum Union, and 8 for "no union."

• United Gas, Coke & Chemical Workers (CIO) won four NLRB elections. Gas-Coke defeated the International Assn. of Machinists by 140 to 39 for bargaining rights at the National Carbide plant near Calvert City, Ky.; took a nearly two-to-one decision at the Stauffer Chemical plant at Mobile, Ala.; and gained a 101 to 83 verdict at National Carbon's Edgewater plant near Cleveland. Gas-Coke Local 504 at Oronite Chemical's plant near Oak Point, La., staved off a decertification attempt.

•

Welfare Fund Panel: Union Carbide's W. H. Winans, vice-president, industrial relations, will be chairman of a National Industrial Conference Board panel on union welfare funds in New York next week.

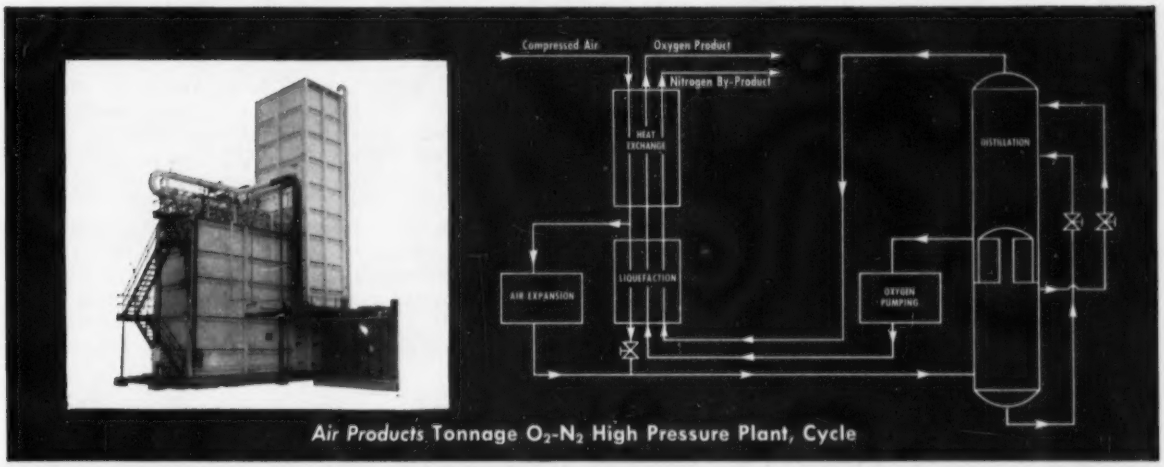
LEGAL. . . . . .

Silicone Reversal: After having dismissed the Wurdack Chemical suit in Federal District Court at St. Louis last spring (*CW, May 30, '53, p. 21*) Judge Roy Harper now has ordered that suit reinstated, so that it may be tried next autumn. Wurdack alleges that Dow Corning (maker of silicones) and Ranetite Mfg. Co. (a St. Louis firm producing silicone water

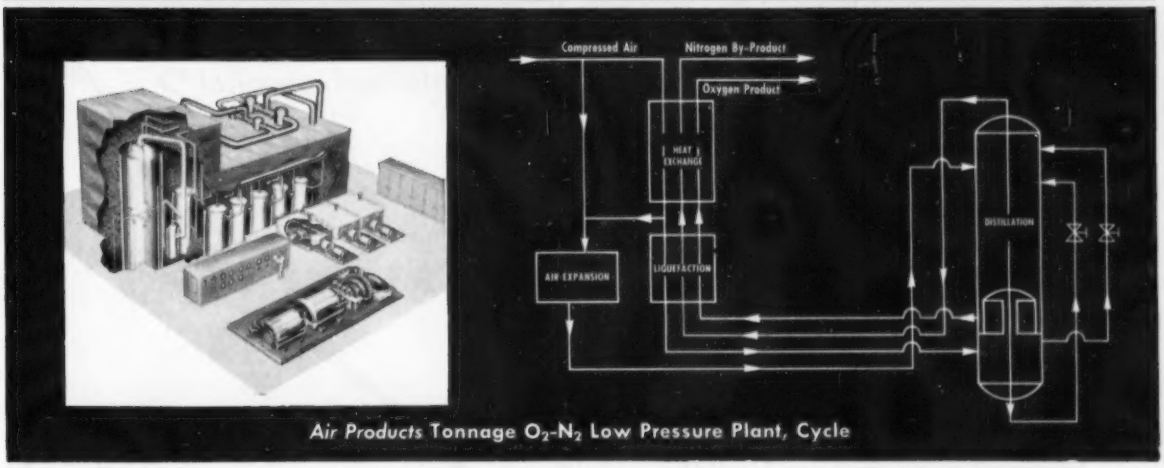
* Union presidents, David McDonald, United Steelworkers; John L. Lewis, United Mine Workers; Dave Beck, International Brotherhood of Teamsters.

Your New Tonnage Oxygen-Nitrogen Plant

—should it employ a high or low pressure cycle?



Air Products Tonnage O_2-N_2 High Pressure Plant, Cycle



Air Products Tonnage O_2-N_2 Low Pressure Plant, Cycle

Your profits depend on the answer to this question. Capital investment . . . space required . . . power costs . . . labor costs . . . maintenance costs . . . all are different for high and low pressure plants.

The only way to find out which type will be the most profitable for you is an expert, unbiased appraisal of these differences *according to your particular situation and requirements.*

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We are equipped to provide complete cost data on a plant to produce oxygen and/or nitrogen at whatever purities, rates and pressures you require . . . design and manufacture the plant . . . and, if you wish, erect, operate or maintain it. *Air Products, Inc., Dept. J, Box 538, Allentown, Pa.*

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Air Products INCORPORATED

Specialists in Low-Temperature Processing

repellents) have been infringing the Wurdack brick patent, No. 2,574,168, describing a silicone treatment process to make masonry walls water-repellent.

•

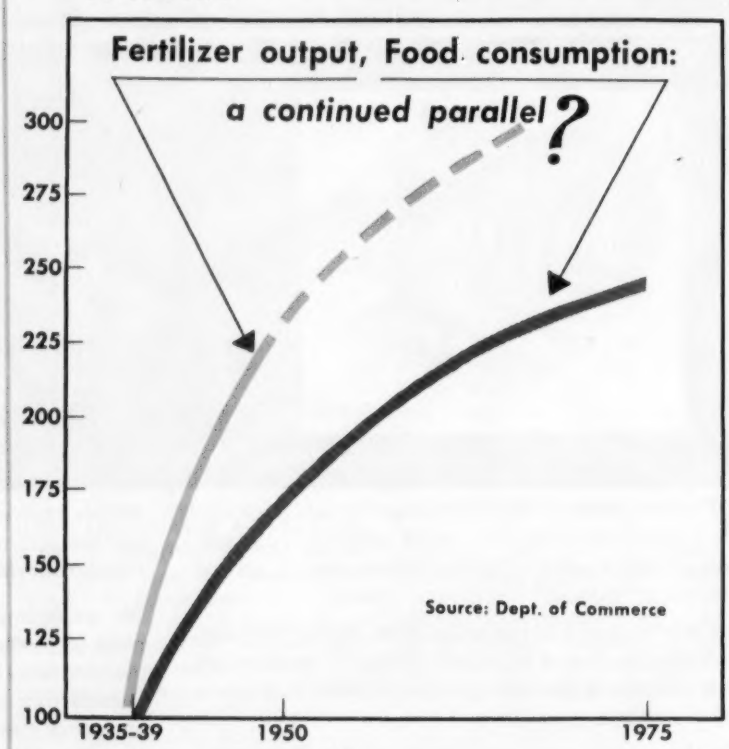
Denies Agreement: American Cyanamid Co. and Reynolds Metals Co. have won a suit that had been filed against them by Harvey Aluminum, Inc., and Harvey Machine Co. U.S. District Judge Edward Weinfeld in New York dismissed the breach-of-contract charges after presentation of evidence. Harvey asserted that Cyanamid had agreed to sell to Harvey all tangible assets of the Berbice Co., a Cyanamid subsidiary operating bauxite mines in British Guiana; but instead Berbice was sold to Reynolds in Dec. '52. Cyanamid denied that it had made any agreement with Harvey.

Potash Denial: When Southern Union Gas Co. asked for permission to increase its rates on natural gas sold to potash companies in southeast New Mexico – contending that previous rates have been less than the cost of furnishing the gas – Potash Co. of America asked the state district court at Santa Fe to issue an injunction against the rate rise. However, Judge David Carmody refused to intervene, holding that his court could not exercise jurisdiction while the case is still pending before the State Public Service Commission.

•

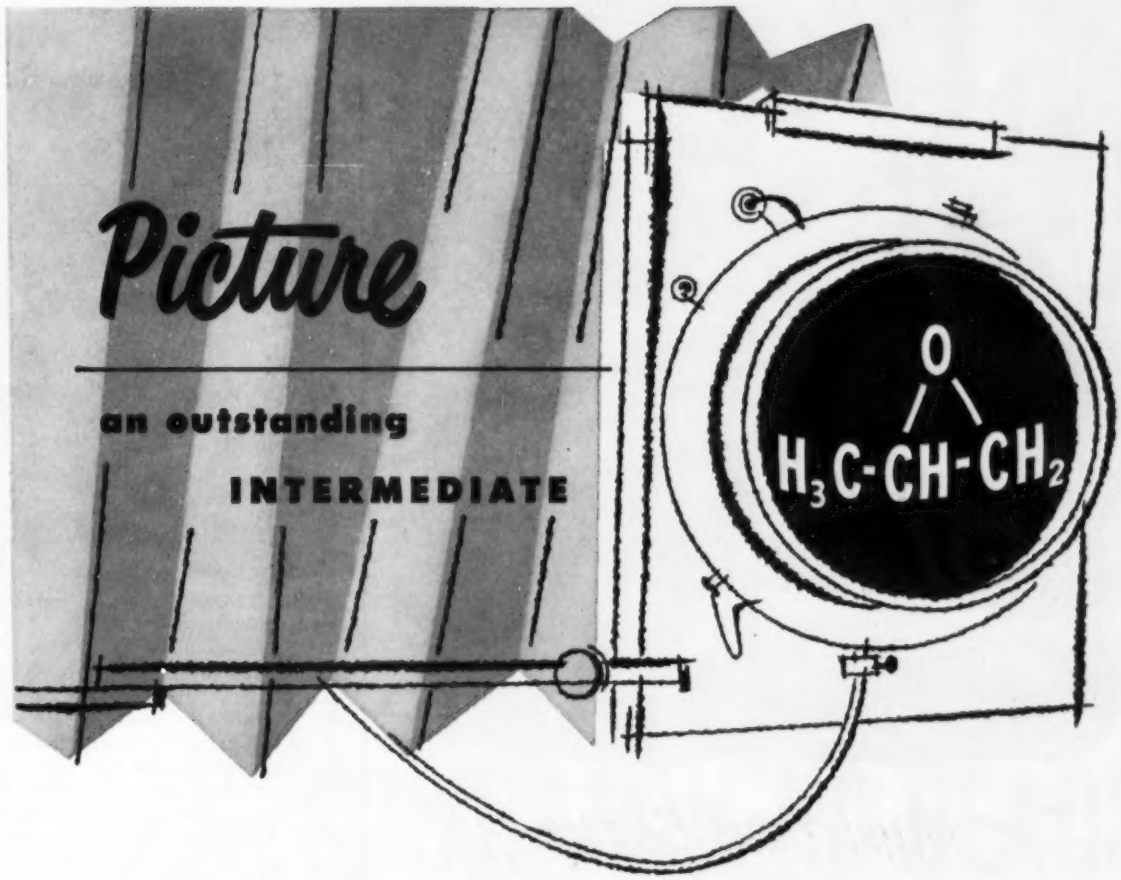
Hydroxy Dismissal: It took a four-year wait but very little effort for Gamma Chemical Corp., New York, to gain a favorable decision in the patent suit filed against Gamma early in 1950 by Darsyn Laboratories, Hawthorne, N.J. Darsyn charged that

IMPACT



Partners in '75?

BY 1975, according to latest statistics compiled by the Dept. of Commerce, farmers in the U.S. will have to raise enough crops to feed about 200 million Americans. Not only will there be more mouths to feed, but people will probably be demanding more and better food. That spells a big challenge to fertilizer manufacturers—whose production has been a steady partner of increasing food production. Their basic problem: How long and how far will the growth parallel continue?



CARBIDE'S PROPYLENE OXIDE

To meet the increasing industrial need for this excellent intermediate, CARBIDE has expanded its production of propylene oxide. Since it reacts with all compounds having an unstable hydrogen atom, a variety of applications are possible.

Two of the uses are in the production of petroleum de-emulsifiers and textile lubricants. Propylene oxide is also an effective stabilizer in the formulation of products from resins that contain chlorine.

Your CARBIDE technical representative is ready to discuss these and other applications of propylene oxide. A Technical Information Sheet on propylene oxide is available from the CARBIDE office nearest you; ask for F-8485. In Canada: Carbide Chemicals Sales Company, Division of Union Carbide Canada Limited, Toronto.

* * *

An added highlight of CARBIDE's propylene oxide expansion is the increased availability of propylene oxide polymers. Such polymers as UCON fluids and polypropylene glycols 150, 425, 1025, and 2025 are excellent lubricants and also may be used in hydraulic fluids. For additional information on propylene oxide polymers, ask for the booklets, "UCON Fluids and Lubricants" (F-8326) and "Polypropylene Glycols" (F-7220).

"Ucon" is a registered trade-mark of Union Carbide and Carbon Corporation.

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JUDGE KNOX: For smaller customers, assured supplies for six years.

Gamma production of hydroxyquinoline was an infringement on patent No. 2,489,530. Gamma did not have to present any evidence; on the basis of testimony by Darsyn witnesses, Judge William Smith dismissed the suit in U. S. District Court, Newark. Smith found that the Gamma process was not in the same temperature range as the Darsyn process.

•

Never-Ending Serial: The government's antitrust suit at New York against Aluminum Co. of America and Aluminum Import Co. was settled last week and a decision may be coming soon in the action at Chicago against Du Pont, General Motors and U.S. Rubber; but there's no sign of a letup in antitrust diligence. Attorney General Brownell has said that the Dept. of Justice is now looking into the nation's automotive industry to see if there is any evidence of "suppression of competition."

Chief Judge John Knox signed the order ending the aluminum suit on terms agreeable to all parties. Alcoa will carry out its contract to buy from Aluminum Import 600,000 tons of Canadian-produced aluminum over a six-year period; but the import firm also will offer 110,000 tons/year to nonintegrated users in the U.S., and in time of shortage, those smaller firms will have priority over Alcoa. Alcoa will offer to sell to Olin Industries up to 40,000 tons/year through 1957 and 20,000 tons in 1958 to enable Olin to expand its aluminum fabricating business.

The order, commented Alcoa President I. W. Wilson, brings the suit to "a constructive conclusion."

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Now you can cash in on the vast synthetic detergent market . . . a market that bought 1.75 billion pounds of detergents in 1953 and expects to use 2 billion pounds by 1955 . . . with Sulframin HD Beads.

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You'll find a ready market for Sulframin HD Beads. They are effectively used for washing dishes and glasses, floor and rug cleaning, metal cleaning, in automatic laundries and for washing automobiles and trucks.

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Please send me full details on Sulframin HD Beads.

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FOREIGN

Caustic Soda/Brazil: The National Bank for Economic Development has conceded a Cr. $180-million loan to the National Alkali Co. to build a soda ash, caustic soda plant at Cabo Frio, state of Rio de Janerio.

•

Phosphoric Acid/Germany: The Knapsack Griesheim Chemical plant at Knapsack has applied to the Allied Security Board, Koblenz, for permission to increase its output of phosphorus "to meet the increased demand for phosphoric acid in West Germany."

•

Sulfuric Acid/Chile: The Corporación de Fomento a la Producción, Antofagasta, is building a 30-40 ton/day sulfuric acid plant, due for completion late this year. Equipment's been purchased mainly from the German Luigi Co., has a value of close to $180,000.

•

Benzol/Australia: Australia's first benzol distillation and rectification plant to make benzol from the extensive Victorian brown coal deposits, will be built at Morwell. Capacity: 3,500 gal./day. Owner: The Gas and Fuel Corp., Victoria; builder: Simon Çarves (Aust.) Pty. Ltd. Sections of the equipment will be made in Australia, some will be purchased from the Simon Çarves parent company in England.

•

Fertilizer/Austria: Austria's nitrogen fertilizer monopoly, the Linz Stickstoff Werke, produced 490,000 metric tons of fertilizer in 1953, and sold more than 550,000 metric tons. Storage building up from 1952 was almost dispersed; added exports accounted for the bulk of the rise in sales. Main customers: European countries (40%), U.S. (17%), Asia (25%), and Africa (18%). In all, 438,000 metric tons were sold abroad last year. Business prospects for the agricultural year 1954-55 are described as "encouraging."

•

Chemical Exports/West Germany: Foreign sales of industrial chemicals from West Germany last year reached 600 million marks – about 100 million more than in 1952; foreign sales of organic chemicals accounted for more than 60% of the total. Main export items (according to the Assn. of the West German Chemical Industry): acetic acid and its salts (37.7 million DM), phthalic acid and its salts (19.8 million DM), urea (19.3 million DM), aluminum oxides (23.8 million DM), sulfates (23 million DM), and fluorides (16.7 million DM). About

· Davison Bulletin ·

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Confidential handling of catalyst problems is one of the reasons why Davison is the major catalyst producer in the country. Intricate coding plus restricted internal distribution keeps your catalyst secrets safe in Davison hands.

Davison recognizes that catalysts are the heart of chemical reactions, therefore, they are a most carefully guarded secret.

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Bring your catalyst problem to Davison where you are assured of confidential handling. Call your Davison Field Service Engineer or write.

Chemical Progress Week
May 17-22

HYDROGEL
to induce microporosity

Manufacturers are using economic hydrogel to induce microporosity in rubber, resins and plastics. Material is a highly hydrated amorphous silica. The hydrogel, which is incorporated in rubber products, shrinks during drying operations thereby inducing porosity.

Davison hydrogel (SiO_2) x H_2O is colorless, translucent and available in semi-solid lumps or finely divided. The range of pH is 5.7 — 6.8.

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Street .....

City ..... Zone .... State .....

B & I . . . . . .

70% of all exports went to European buyers; sales to North America were considerably bolstered by the rise in exports to the U.S. – to some 50 million DM in a variety of chemical products.

West German imports of chemicals rose also – by 24 million DM to 620 million DM in 1953. Main imports: dyestuffs, pharmaceuticals, synthetic fibers.

•

PVC/Austria: The Chemical Works of Hallein, Salzburg Province, have reached an export volume of 500 metric tons/year of polyvinyl chloride –mainly to Sweden, West Germany and the U.S. In operation only one year, the firm is reported to be discussing resin exports with the European East block. No deal has been closed as yet, however.

•

Synthetic Resins/Japan: Aimed at cutting Japan's relatively high foreign exchange rate, is the Ministry of International Trade and Industry's new plan to triple production of synthetic resins. Under its terms: by 1958, Japan should be producing 17,000 tons of phenol resins, 33,000 tons of urea resins, 55,000 tons of polyvinyl chloride resin, 5,000 tons of polyethylene, 12,000 tons of polystyrene annually. Cost to the industry: $67.6 million in expansion. Several U.S.-Japanese firms are involved in the over-all strategy: Japan Bakelite Co. (for phenol resin expansion), Monsanto Kasei Co. (for polyvinyl chloride resin), Japan Silicone Resin Co. (for silicone resin), and Riken Synthetic Resin Co. (for urea resin).

KEY CHANGES. . .

Harold H. Jaquet, to vice-president and general manager, Pan American Sulphur Co., Dallas.

Leonard T. Murphy, to treasurer, Jefferson Chemical Co., Inc., New York.

Weston G. Thomas, to executive vice-president, **Frank Coolbaugh,** to vice-president, western operations, **Alvin J. Herzig,** to vice-president, research, and **Wallace Macgregor,** to treasurer, Climax Molybdenum Co., New York.

Kenneth H. Hannan, to vice-president, and **John F. Shanklin,** to treasurer, Union Carbide and Carbon Corp., New York.

Alan S. Evans, Jr., to vice-president, sales, Neville Chemical Co., Pittsburgh.

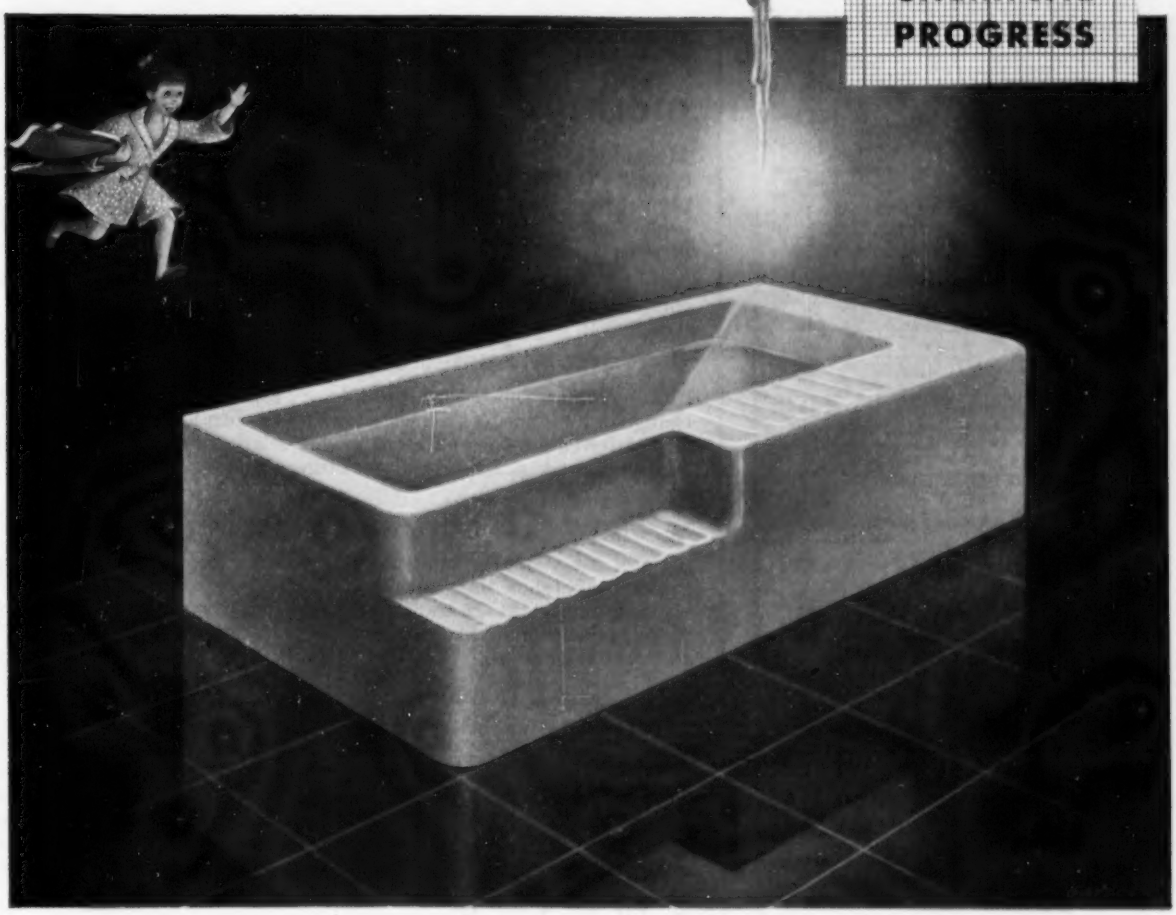
Robert E. Hilbrant, and **Marshall S. Lachner,** to vice-presidents, Colgate-Palmolive Co., Jersey City, N.J.

Q. *Could chemical research develop reinforceable liquid resins to produce strong, light plastics that could be "worked" easily and inexpensively—especially in large sizes?*

A. **THE "SYRUP" THAT PUTS NEW PLASTIC SHAPES AT YOUR FINGER TIPS**

Another example of

CHEMICAL PROGRESS



Here you see one unusual example of what the "syrup," known as polyester resins, makes possible in design and production.

By combining G-E polyester resins with glass fiber or other reinforcing material, you can mold, simply and easily, large or small plastic shapes of your choosing.

For example, you can produce lightweight bathtubs that would be warm to the touch, colorful and pleasing to the eye, and resilient to falling objects . . . or, auto bodies and other housings that cannot dent like metal, that resist heat, cold and corrosion.

At low fabricating costs, you can build bathtubs or auto bodies, luggage or aircraft parts—just about anything you want. And, you can readily vary toughness and flexibility as you wish.

This is progress for all, through General Electric Chemical Progress.

★ ★ ★

For new developments in Plastics Compounds, Silicones, Electrical Insulating Materials, Industrial Resins and Varnishes, Plastics Laminating and Molding . . . write for new "G-E Chemical Products" booklet (CDG-101) to: *CHEMICAL DIVISION, General Electric Company, Sect. 400-3B, Pittsfield, Mass.*

Progress is our most important product

GENERAL ELECTRIC

CHEMICAL PROGRESS WEEK MAY 17-22

HOW TO GET GOOD RESULTS IN EMULSION FORMULATION

Here are a few tips, gathered from Atlas research and application experience, which will help you in the preparation of emulsions.

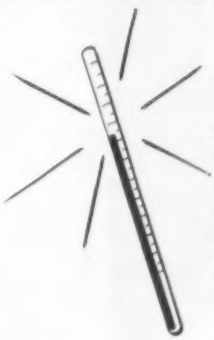
Use emulsifier blends

Every emulsion requires its own balance of oil-loving and water-loving groups. Often this balance can most effectively be obtained through the use of emulsifier blends. The Atlas HLB system (hydrophile-lipophile balance) will steer you to the right types to use, and will help you arrive at optimum ratios.

Add emulsifiers properly

For example, if you're making an O/W emulsion containing fairly high concentration of emulsifiers, start by dispersing the emulsifier in the oil phase. Then add water slowly to the mixture until the inversion point (W/O changes to O/W) is reached . . . after which the remaining water is added more rapidly. When small percentages of emulsifiers are used, add oil and emulsifier to the water in a pre-mix, and then homogenize the coarse emulsion.

When making W/O emulsions, it is best to add water to the mixture of oil and emulsifiers, and then to homogenize the emulsion. Homogenization may not be necessary if a small amount of hydrophilic emulsifier is used in addition to the strong W/O emulsifier.



Watch temperatures

Oil and aqueous phases should be at approximately the same temperature at the time of mixture. To allow for cooling, it is best to have the phase to be added about two degrees warmer than the other phase. If waxes are a part of the oil phase, temperature should be at least 10 degrees above the melting point of the wax.

Another tip

Select your emulsifiers from the several non-ionic types available from Atlas. And use the Atlas HLB system to save hours of experimental work in finding the proper emulsifier or blend for your own problem.

New stearic acid gives highest color stability

The new HYSTRENE® T-45 pressed ratio (55% palmitic—45% stearic) stearic acid, an addition to the well-known HYSTRENE line, was developed especially to meet the need of the cosmetic industry for a pressed ratio acid with exceptionally high resistance to darkening and rancidity.

Made by the patented Trendex solvent refining process, HYSTRENE T-45 is extremely low in iodine value (0.5 max.) and unsaponifiables (0.15 max.). Its melting point is 55-56° C. We urge you to compare it against highest quality triple-pressed acids by any color stability test method known.

The HYSTRENE acids are made by the Trendex Division, The HumKo Company, and are distributed exclusively by Atlas.

ATLAS CHEMICALS FOR TEXTILE PROCESSING

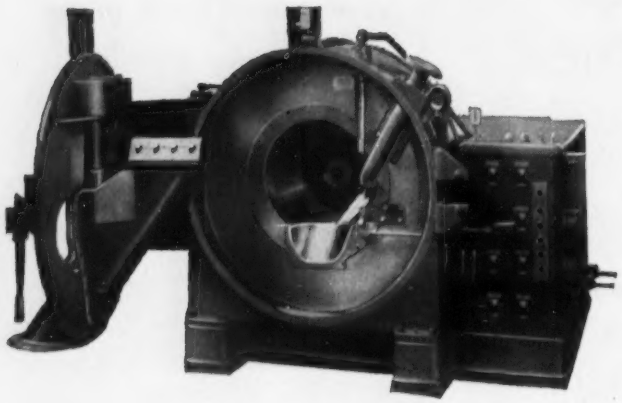
Many Atlas surface active agents are applicable in textile processing. These materials are designed to accomplish an all-around surface treatment of staple or yarn in a single application, combining the desired effects of lubrication, softening and static control.

Because they are 100% active, these chemicals do a superior job in small dosages. They are readily dispersed in warm water, and can be added to dye baths, or rinses, or sprayed; some types are supplied as wax discs over which the yarn runs during winding. They have excellent stability; will not discolor, turn rancid, wick out or migrate.

Developed and manufactured by Atlas, these chemicals are distributed by American Viscose Corporation. For full information and technical assistance in application, write to American Viscose Corporation, Textile Chemicals Sales, 1617 Pennsylvania Boulevard, Philadelphia, Pa.

BAKER PERKINS EQUIPMENT FOR EFFICIENT

CENTRIFUGATION

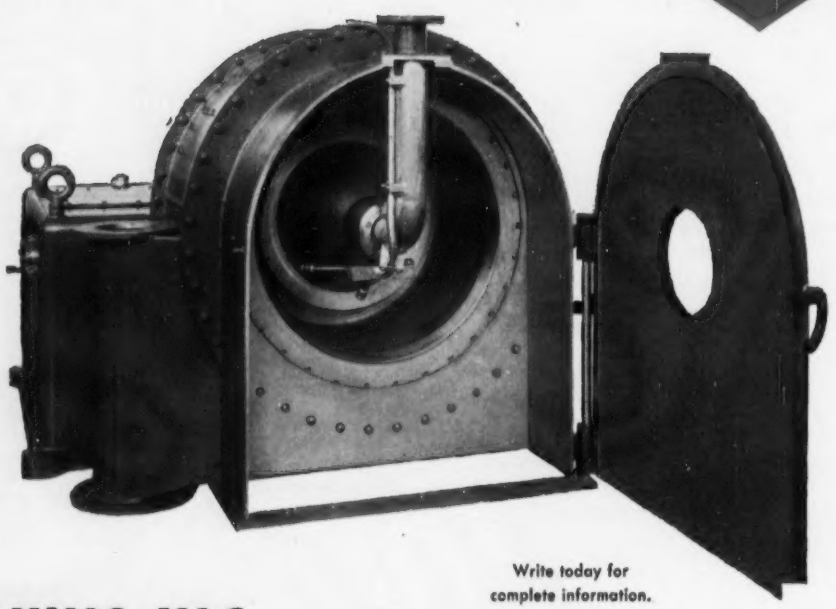


B-P Type HS Universal Filtering Centrifugal: Fully automatic, requires no operator attention, but can be equipped with manual controls. Simple, trouble-free cycle controller handles complicated centrifugation cycles easily — compensates for process variables. Easy change to almost any filter media keeps maintenance costs low. Constant speed drum rotation reduces power requirements. In capacities from laboratory sizes to 16,000 lbs. per hour.

B-P Type S Continuous Centrifugal: Continuous operation requires no timing or cycle controllers. No scrapers, baffles, rakes or plows to break down delicate crystals. Constant speed drum rotation keeps power requirements low. Rugged construction insures long service with very little maintenance. In capacities from laboratory sizes to 48,000 lbs. per hour.

Above: Type HS Universal Filtering Centrifugal for centrifugation of a wide range of filterable solid-liquid slurries.

Right: Type S Continuous Centrifugal for centrifugation of a wide range of relatively free-draining crystalline, granular and fibrous materials.



Write today for complete information.

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280

CHEMICAL MACHINERY DIVISION • SAGINAW, MICHIGAN

Our Seven Wonders

The chemical industry will pause for a brief moment next week along the path of its forced march. It will look back along the uphill trail it has traveled; it will gaze from a high point and become aware, for a minute, of its newly won eminence.

"Chemical Progress Week" (*see p. 44*) will afford that hurried pause. It's the first concentrated effort by the whole industry—preoccupied until now with its own internal problems of precipitate expansion—to tell its story to the public.

While the project is thus primarily designed to catch the attention and win the understanding of the average American man and woman, at the same time it will figuratively grab many a chemical man by his lapels, shake him into realizing how much he and his fellow workers have contributed to the world's material welfare.

The plain fact is, for a round dozen years the chemical businessman has been busy—busy researching and building, producing and selling. Immersed in his daily job, beset by the complexities of commerce, he has given little heed to the euphonious but plumbline-true mottoes like "Better Things for Better Living," "Serving Industry. . .Which Serves Mankind," and "Chemicals You Live By."

For those slogans are indeed rooted in truth. The chemical industry makes no pretensions to altruism, for its function is purely economic. Nevertheless, in pursuing its economic ends it has reshaped the pattern of daily life. In countless ways, both obvious and subtle, it has wrought a quiet revolution in our mode of living; it has put more food on the table, enlarged our wardrobes, facilitated our transportation, and contributed in no small measure to the necessaries and niceties of existence.

So pervasive is the industry throughout the fabric of our industrial economy, it is difficult to find a single area devoid of its influence. But most spectacular, perhaps—and hence most typical—are the wonders worked by chemical processes and syntheses in these seven fields: fibers, rubber, plastics, medicines, metals, detergents and agricultural chemicals. Wherever the chemical industry has touched each of these, old norms have been scrapped and broader potentialities have been illuminated.

Synthetic Fibers: It's only a generation ago that the first man-made fiber, rayon, became a commercial product. This early, inferior "artificial silk" accounted for only 2% of total textile consumption in 1925; today a vastly improved rayon fills 18% of the greater per capita needs of a considerably larger population. Putting it another way, rayon use has multiplied 40-fold in 30 years—from 40 million lbs. in 1924 to about 1,600 million lbs. this year.

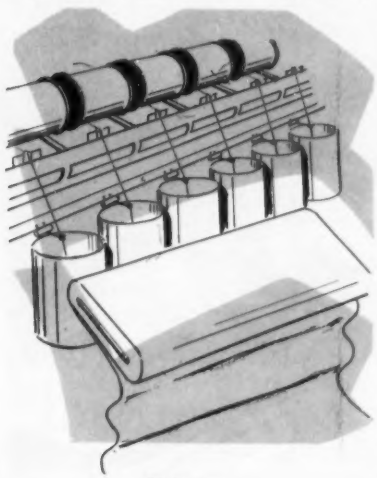
Rayon's success spawned a school of newer, more completely synthetic fibers, the oldest of which, nylon, is a mere 14 years old. These newer fibers alone—additional ones are dynel, Vicara, Acrilan, Orlon, Saran, and Dacron, among others—will account for some 400 million lbs. this year, or over 4% of total textile fibers consumed.

These figures are significant to the chemical businessman: they mirror new jobs, new capital investment, new markets for raw materials and intermediates.

But what of their broader significance? The average American spends a lower proportion of his money for clothing (less than 13¢ of his dollar today compared with 15½¢ in 1920), but he has a greater quantity and variety; upkeep—ironing, laundering, cleaning—costs less and takes less time; and he consequently has more money to spend on other necessities and comforts. So much impact has already been made in so little time, it's a laggard imagination indeed that can't visualize future possibilities.

Plastics and Resins: Much the same case can be made for synthetic resins and plastics. Total output back in 1922 was less than 6 million lbs. Today the figure is above 3 billion lbs. That 500-fold growth is impressive enough, but even more impressive is the fact that it has created an entire new industry. Today 34 chemical firms employ 20,000 workers to turn out plastics raw materials; 1,300 plants with 30,000 employees mold and extrude plastics; there are 1,500 fabricating plants with over 5,000 workers; 50 firms, with 6,000 workers, make laminated and reinforced plastics; and 1,500 plants with 20,000 workers manufacture plastic film and sheeting. Tonnage output of plastics now exceeds that of any metal except steel.

From the molded television cabinet in the living room to the squeeze-bottle air freshener in the kitchen, from the nylon-bristled toothbrush to the steering wheel of the family car, plastics have wrought wondrous changes in American living. If a housewife doesn't have time to wash her melamine dinnerware with a syn-



Fibers

Plastics

thetic detergent, she can buy plastic-coated paper plates, use them once, toss them into a polyethylene garbage pail. Replacing costlier and less easily fabricated woods, metals and ceramics, plastics have had a profound impact on our everyday living habits—an impact that will be immeasurably heightened as these materials move ahead toward an estimated eightfold increase in the next two decades.

Rubber: It isn't fair to say that the chemical industry put this nation on wheels; most of the credit goes to Henry Ford and the mechanical engineers. But the chemical industry kept the nation on wheels during World War II when synthetic rubber stepped into the breach caused by the cessation of natural rubber imports. Today the man-made products have won a secure place of their own, and even in free competition with the natural material they account for the bulk of rubber production.

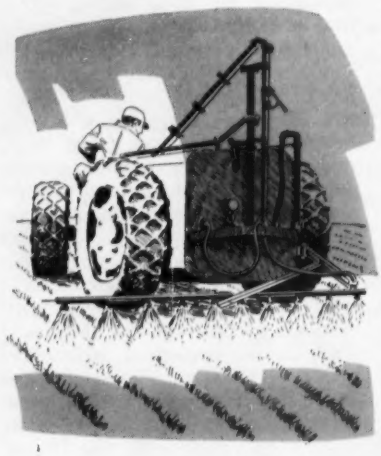
Our billion-dollar synthetic rubber industry was one of the production miracles of World War II. It hit volume production just 18 months after starting from scratch, as chemical companies brought butadiene and styrene from the test tube to the tank car in record time. During the decade of the '40s synthetic rubber enjoyed a faster growth rate than any other segment of the industry.

Nor is the contribution of the chemical industry limited to the development and production of a whole galaxy of special-purpose rubbers. Improved carbon blacks, new and better compounding agents, synthetic fiber tire cords—all make it possible for motorists to drive more miles at higher speeds than heretofore.

Rubber

Automobiles and trucks—and there are some 50 million of them—have turned topsy-turvy the old patterns of living, fostering the phenomenal growth of suburbs and the dispersal of industry and commerce. Many branches of technology have helped to bring it about, of course, and the chemical industry has played an essential role.

Agricultural Chemicals: Even the weekend gardener and the window-box horticulturist is familiar with synthetic soil conditioners and insecticide dusts and sprays. But what they—and fertilizers, fungicides, plant hormones, fumigants, weed killers and feed supplements—have done for the farmer and orchardman is a projected enlargement of Cinerama size.



Ag chemicals

In 20 years farm population has declined 9½%, but agricultural output has risen 45%. (Acreage in use is about the same; but the tractor has replaced the horse, and hence pasture land formerly used to feed the farm animals can now be productively cultivated.) In 15 years use of fertilizers has tripled (to 25 million tons) and consumption of all other agricultural chemicals has jumped tenfold. During the same 15 years crop yields per acre rose 28%; animal yields, 13%. A farm worker now raises enough food to feed himself and 14 others.

Use of agricultural chemicals doesn't stop at the farm or orchard. Such products as humectants, mould retardants, anti-oxidants and germicides aid in preserving and improving foods, cut down spoilage and waste.

All this has already built a great deal into our standard of living, and it will add a great deal more as population growth and continuously rising nutritional standards (viz., more meat, less cereal grain) tax the farmer's productive ability.

Detergents: Art often improves upon nature, and nowhere is this more dramatically demonstrated than in the field of surface-active agents, especially detergents. In the brief span of 20-odd years, synthetic detergents have caught up with and now surpass soap in tonnage production. During the '40s, detergents output climbed steeply at an average annual rate of 41.4%.

This hefty rise is all the more significant because synthetic detergents don't do spectacular jobs; they simply do better than ever what soap and other cleaning agents have always done. And they do these jobs better simply because the chemist, freed from the limitations of natural materials, has been able to start from the very beginning and custom-build into his product the optimum characteristics for a particular job—be it laundering nylon hosiery in a washbowl, grimy dungarees in an automatic washer, bed linen in a commercial laundry, or greasy metal parts in a tool shop.

It would be stretching it a bit to say that detergents have revolutionized our living habits. But they have made many industrial and household tasks easier and pleasanter; and independence from natural raw materials means that the price—unlike that of coffee—is stable from month to month.

Metals: Typical of the chemical in-

Detergents

dustry's vital role in national defense is metals development and production. The military wants "hot" planes—high-flying, bullet-fast jets; but to make them the aircraft industry needs light, strong, heat- and corrosion-resistant materials of construction.

Such a material, titanium metal, was discovered in 1789 (the year George Washington took office as President), but by 1948 it was still a rare curiosity. The following year, 25 tons of it was produced; last year 2,400 tons was turned out; and the government's goal for 1956 is 35,000 tons/year.

Chemical firms are in the forefront of titanium development since the metal is won from its ores by chemical means. New electrolytic processes (*CW Newsletter, May 8*) are now being readied, may slash the price from the current $5/lb. range.

Metals

Zirconium, too, has desirable properties like titanium—and some additional ones that have caught the eye of the Atomic Energy Commission. It will soon be a commercial material of some stature, and it will assume greater importance as process research cuts its cost.

Unless one is a jet pilot or an atomic scientist, these metallic miracles don't strike very close to home. But tonnage output—resulting from chemical research—will beef up our defensive strength. And adaptation of these new metals to peacetime pursuits will provide superior, longer-lasting process equipment—and that means lower capital outlay and hence lower costs.

Medicines: Nowhere does the chemical industry touch the lives of everyone so grippingly as in the field of medicine. The average American has been given an additional 20 years of life since 1900, and though the medical profession points with pride to these figures, the chemical industry certainly should be given much of the credit for its development and mass production of antibiotics, sulfa drugs, and a host of other therapeutic chemicals, as well as for its contributions to nutrition and sanitation.

Penicillin output, for example, soared from practically nothing in 1943 to about 400 trillion Oxford units a short ten years later; and meanwhile, price plummeted from $8 per million units to a few cents. Antibiotics alone accounted for over a fifth of total drug sales last year, and the production-price-effectiveness history of penicillin, repeated by the others, has made a big difference in drug bills.

Today less than 17¢ of every dollar spent for medical care goes for drugs, whereas in the late '30s they accounted for 21¢.

But by discovering and developing means to control such infectious diseases as pneumonia, meningitis, scarlet fever and the like, chemical and medical researchers have saved patients only to see them succumb to the chronic degenerative diseases of old age, for which there are yet no cures. This is a typical example of how the industry, by solving the problems close at hand, has created new problems somewhat further removed.

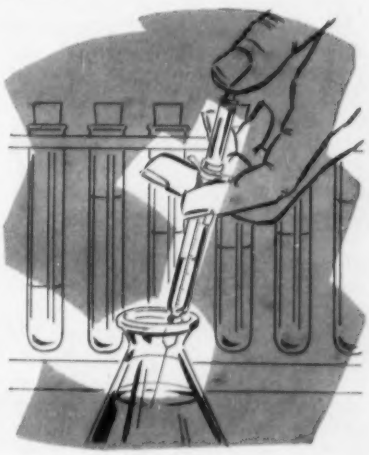
Pressing Problems: These seven wonders, and many more, are overshadowed by the composite pattern of 20th-century technology to which, for better or for worse, we are committed. And this pattern, which is but an extension and modification of the Industrial Revolution, is creating problems of its own.

The trend toward automation, for example, means that fewer, more specialized workers are using increasingly complex and costly tools to produce greater quantities of goods. This requires a more extensive capital structure, which is replacing the 18th- and 19th-century entrepreneur, who owned and operated his business, with the impersonal investment trust and an anonymous sea of investors whose only connection with the corporation is an annual proxy form. Thus have greater responsibilities devolved upon the managers, as distinct from the owners; but it's not clear that a corresponding authority has been granted to them to deal with the socio-economic problems that industry creates—problems of human relations, responsibility to the community and to education, conservation of resources, and the like.

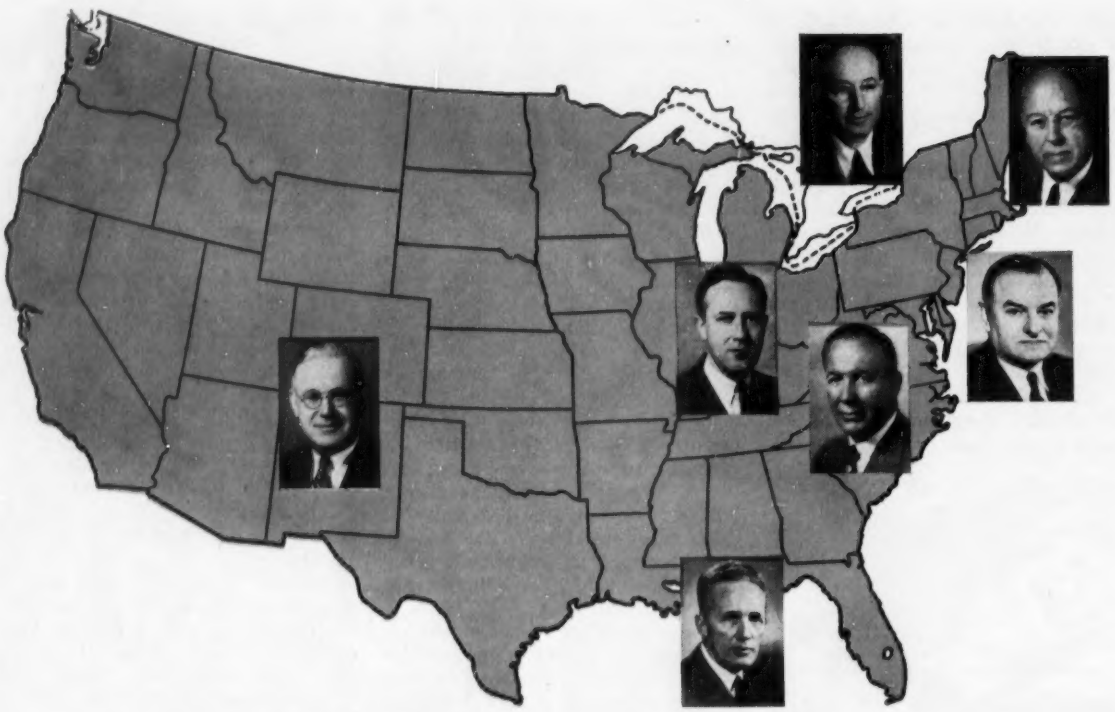
Perhaps these are problems for the sociologist, the psychologist and the politician. But the businessman, because he is largely responsible for these thought-provoking issues, cannot be ignorant nor heedless of them.

But the chemical industry thrives on problems; they are, in truth, its *raison d'être*. "Chemical Progress Week" celebrates a star-grazing triumph achieved by overcoming difficulties. The industry—created out of sheer necessity by World War I, driven into expansion by World War II, and brought to maturity by the subsequent years—has never had it easy. In its infancy it was beset by the industrial giants of Europe. Malnutrition stunted its growth during the Great Depression. World War II made staggering demands upon it and at the same time stole away the men and materials it needed to meet those demands. In the years since, expansion's appetite has outstripped the harvest of technical and managerial manpower so that the industry has been hard put to build and manage its new facilities.

The years ahead will surely intensify old problems and throw out new challenges. Just as surely will the industry mobilize its unparalleled resources to meet and overcome them—for such is the chemical man's métier.



Medicines



THIS IS CHEMICAL PROGRESS WEEK: In the cities, major addresses.

. . . And Seven Stature-Building Days

Startling even its most optimistic backers with the spontaneity of its enthusiasm, the chemical industry is poised today on the brink of a week-long round of stature-building. Purpose: to bring home forcefully to the public the significance of the chemical industry in terms of the individual.

First nationwide effort of the chemical industry to promote itself in terms of the man in the street's interest, this year's effort was originally a modest dream in the minds of Manufacturing Chemists' Assn. officials. Gathering together last February (*CW, March 6, p. 21*) to talk over plans for "Chemical Progress Week," members frankly felt there wasn't much point in expecting too much too soon. Time was short; the chemical industry had long been laggard in selling itself to its neighbors.

The initial decision, therefore, was to muster as many communications and public relations tools as possible, strive for a major speech-making effort at both national and local levels. How far individual plant representatives would go in cooperating with the MCA in the 5,000 towns in which member companies operate facilities, nobody knew. But that the observance – if it was to be a true demonstration of the chemical industry's desire for recognition – should well up from a grass-roots level was MCA's great hope. The success of Chemical Progress Week would (and will) be in direct proportion to the success of individual, local and area committees.

Building a Framework: To help these committees do the best job possible, MCA arbitrarily set up a 26-division map, appointed regional chairmen ("the top name in the area") and vice-chairmen ("a public relations man, where we could find one"). Simultaneously, member companies were each requested to appoint a company chairman, who in turn was charged with the responsibility of naming plant chairmen. Brunt of the work, necessarily, fell upon plant representatives; the regional staff was a loose structure, formed to "give as much aid as possible."

"What's amazed us all," marvels one MCA representative, "is how eagerly plant representatives have pitched into the spirit of the thing. They must have been just itching for a chance to talk about just how much chemistry affects the daily life of everyone, how the industry has improved the standard of living, aided our national security."

Taking matters into their own hands some plant managers (in smaller towns where two or three chemical plants make up the town) have even formed subcommittees of their own in an effort to "get a better pitch at the public." Work is broken down, parceled out among a number of volunteers; everyone who's interested gets a chance to participate.

Available to every chairman and representative has been a detailed kit of material including pattern talks (for particular groups of people), advertising suggestions, radio and TV program tips. "But the demand has been such that we've been hard pressed to keep up with it." Phone calls pour into Washington headquarters asking for additional information. Requests from small plants in towns

IN THE TOWNS: Placards in buses (Buffalo), and posters in the windows (New York).

such as Mt. Pleasant, Tenn., and Bartlesville, Okla., are typical of the sort of impact Chemical Progress Week is having from one end of the U.S. to the other. From the one: a request for information suitable for high-school students' consumption; from the other a relayed plea for material suitable for debate before the local Women's Clubs.

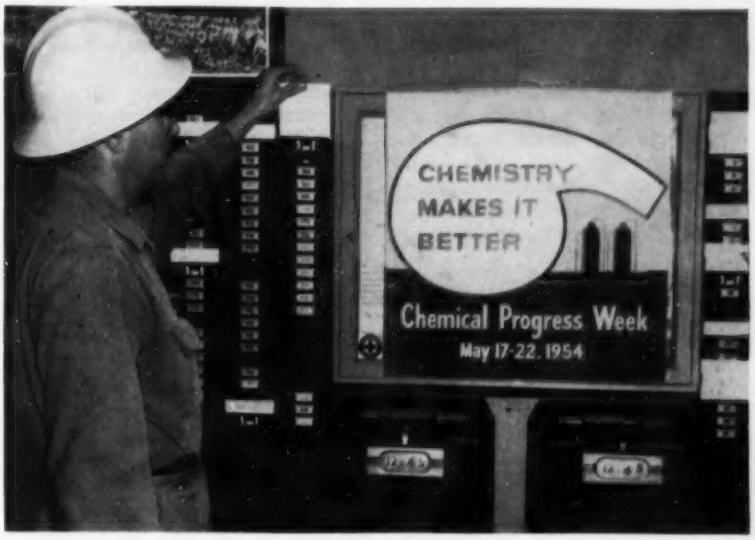
Centers of Activity: Especially active in a concentrated effort to get a well-coordinated Chemical Progress Week in motion have been a number of regional committees that are not only following the general outline suggested by MCA mentors, but are also adding a special twist or specialty of their own. Sometimes it's a program wrapped around a headline speaker, or an idea that has evolved in the area itself. No complete returns have yet been tabulated, but here's a cross-section of how the nation will learn about the chemical industry next week:

W. Pennsylvania

"Best example of the big cities that are rolling along on a wave of Chemical Progress Week enthusiasm," is Pittsburgh, Pa. Representatives of Columbia-Southern, Koppers, American Cyanamid, Neville Chemical, Alcoa, Fisher Scientific, and Pennsalt were the first to get the idea of a kick-off luncheon – to be given May 17. Their purpose is twofold: (1) to set up a public springboard of interest, and (2) to lure community leaders into the program through 250 invitations (at the companies' expense) issued to a cross-section of the clergy, educators, civic officials. Columbia-Southern came up with another novel twist to get the message of CPW over to the younger set. Lapel buttons (250,000 of them) were printed and distributed to children of company employees – who in turn passed them out to school friends. "It went off like a bombshell," says one company spokesman. "Before we knew it, we were swamped with requests for buttons. Next year there's no telling how many we'll have to order . . . "

Western New York

"The biggest problem in western New York," says one plant representative, "was efficient distribution of responsibility. Once the ball started rolling, everyone wanted to do something; it took some doing to parcel out responsibilities so we wouldn't be tramping on one another's heels." Feature of the program will be Leland



IN THE PLANT: Constant reminders.

Doan's speech in Buffalo where "for the entire month of May local buses are carrying Chemical Progress Week placards." Wide use will be made in upstate New York schools and clubs of industry films (Monsanto's "Decision for Chemistry," and a host of Du Pont productions). The usual posters are adorning bank, store windows, but in many smaller towns, poster contests are spurring interest in what the *local* plant is doing "to make products used in every home." A handful of towns are sponsoring essay contests; there's a speaker's bureau with representatives lined up from 36 plants to "talk about any of the various phases of the chemical industry desired."

Michigan

Dow, Wyandotte and Michigan Chemical are the moving forces behind the celebration of Chemical Progress Week in greater Michigan. Feature of their presentation: a mass invasion of the schools in and around Midland—most often in the form of a seminar where students and science teachers alike will be invited to pepper questions at industry panelists.

Virginia

Virginia Smelting has been picked as the pace-setter in the Norfolk-Portsmouth Tidewater area of Virginia, Chemical companies in the area (including Monsanto, Procter & Gamble, Virginia-Carolina and The Texas Co.) met at a luncheon April 27 at the Norfolk Yacht & Country Club as the guests of Karl Ellingson (Monsanto), set up plans for a blanket celebration in the area. Highpoints: special lectures, programs in high schools and colleges, posters on all transit company buses. Indicative of the enthusiasm that the members have for the plan: officers for next year's Chemical Progress Week have already been elected—to grant "greater time for preparation."

Northern New Jersey

Northern New Jersey, thanks to a heavy concentration of the chemical industry, has divided itself into subregions to get its Chemical Progress Week activities in motion. Illustrative of how the Garden State expects to reach the public next week is the program described by the Raritan Valley section. N. H. Meyer (Bakelite), chairman, says the area will drive on TV broadcasts (such as The Rutgers University Forum—a "Meet the Press"-type panel) and plant tours. Also stressed: displays in stores "where the heart of the American public passes by." The area will beam its greatest celebrations at small town communities (such as Bound Brook—where a giant banner will be displayed over the main street), is counting on a number of specially edited employee bulletins to stir up last-minute zeal at the worker level. That the idea has caught on is already apparent however. States one production man in a small intermediate company plant: "This is the most notice we've ever had in the town. People have been calling up . . . asking for material for their displays, complimenting us for our part in the chemical industry's contribution to society. It should do great things for our public relations . . . smooth a lot of ruffled feelings about smoke pollution problems in the future. My main question is this: Why hasn't the chemical industry gone to the public long before this?"

Illinois

Illinois' problem in promoting Chemical Progress Week on any major scale has been largely the same as the one encountered in Greater New York. Blanket coverage of a major city means effort largely expended on "too concentrated a population." So CPW representatives decided to leave the cities to the major speakers (Allied's Emmerich in New York, Air Reduction's Munson in Boston, MCA's Foster in Washington, Wyandotte's Semple in Detroit, Du Pont's Ward in New Orleans, and Monsanto's Curtis in Denver) and rivet their own attention on the outskirts.

Victor plant managers have been eager and solidly behind the plan, have organized all chemical towns in southern Illinois behind a drive to "put a speaker with a home-town flavor on the platform of any and every town . . . worthy of the name." And MCA is roundly applauding the effort. "That's what the week should mean to us all. It's getting the idea across to the most number of people . . . in the terms they best understand."

District of Columbia

In Washington, Chemical Progress Week will get a send-off from the Armed Forces Chemical Assn., which is tying in its annual meeting with the start of the week. A TV show, Around the Town, will salute the industry daily "in a half-chemical, half-technical manner." The Defense Dept. (through the Air Force) will outline its use of the industry's products, will feature speeches by General Nathaniel Twining, and the new chief of the Chemical Corps. The Atomic Energy Commission, not to be outmaneuvered, will put a nuclear reactor on display at Washington's Shoreham Hotel.

Other areas (such as southern Ohio) started late on Chemical Progress Week organization . . . but enthusiasm's bubbling forth now. The Colorado area is centering its presentation around Frank Curtis's speech in Denver. Texas (late starter) is perched on a gala round of barbecue send-offs.

Consensus

Best indication of how whole-heartedly the chemical industry (at a plant level) is behind the idea of Chemical Progress Week is revealed in the flood of phone calls pouring in to all representatives—everywhere. "Main drive behind the program in our area," says one rushed regional representative, "is the way they're pushing us for information, ideas."

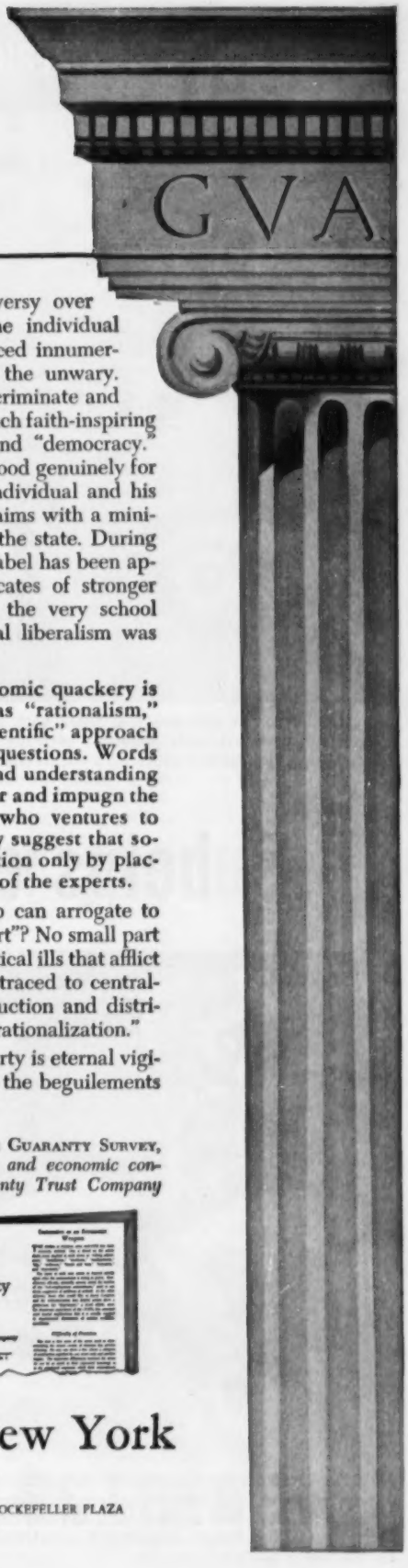
"The part that amazes me most," echoes another, "is how succinctly the concepts of the week keep coming back to me. We aren't trying to sell the concept of the Week to the chemical industry. Our thesis is constantly repeated in letters, phone conversations. No one is missing the point . . ."

Why? Probably because chemical men have been conscious for many years of their miscast reputations as "bad neighbors." Everyone's been trying to do something about it, but much that's been done has been ineffectual. This is the first real chance the chemical industry has had to express itself. "And chemical men everywhere are grasping the opportunity . . . they know it's so long overdue."

Overdue, too, is enlightenment of the public, which is far more aware of the science writer's fantasies than the industry's solid accomplishments. The average American knows all about oil, about steel, about aluminum; but the more complex and less obvious achievements of the chemical industry have not been seen in perspective.

That's what's making Chemical Progress Week this year. That's the reason why MCA put its dream into action. And that's why the Week is sure to become an eagerly anticipated event each year.

Semantics as an Economic Weapon



THE decline in business since mid-1953 has been variously dubbed. One is dazed by the subtle distinctions implied in such terms as "rolling adjustment," "disinflation," "un-boom," "readjustment," "dip," "deflation," "boom and bust," "recession" and "depression."

The name in each case seems to depend mainly upon what the commentator is trying to prove. Government officials, naturally uneasy under the burden of the "full-employment commitment," tend to use terms suggesting mildness of setback. At the other extreme, those who would like to hurry Congress and the Administration into drastic action show a preference for "depression," a word which has assumed fearful implications.

None of the terms used in characterizing the recent course of business has precise meaning. The important differences between the terms do not lie so much in their expressed meanings as in the emotional responses which their connotations evoke in reader or listener. If these responses are subconscious, as they usually are (and are often intended to be), the reader or listener is allowing himself to be imposed upon.

Discussion of the present business situation in terms calculated to arouse fear or promote confidence is a case in point. Those who demand that the Government take steps to prevent a "full-blown depression" do not advocate inflationary deficit financing—not in those words. They recommend public works and tax relief, which mean inflationary deficit financing but sound much better. "Inflation" and "deficit" are fear words. They suggest unsound fiscal practices, rising costs of living, and currency depreciation. "Public works" and "tax relief," on the other hand, conjure up mental images of more money in everybody's pocket, along with fine new roads, schools, hospitals and playgrounds.

The perennial controversy over the relation between the individual and the state has produced innumerable semantic traps for the unwary. One of these is the indiscriminate and often misleading use of such faith-inspiring words as "liberalism" and "democracy." Historically, liberalism stood genuinely for the importance of the individual and his right to pursue his own aims with a minimum of interference by the state. During the past generation the label has been appropriated by the advocates of stronger governmental authority, the very school of thought that historical liberalism was formed to combat.

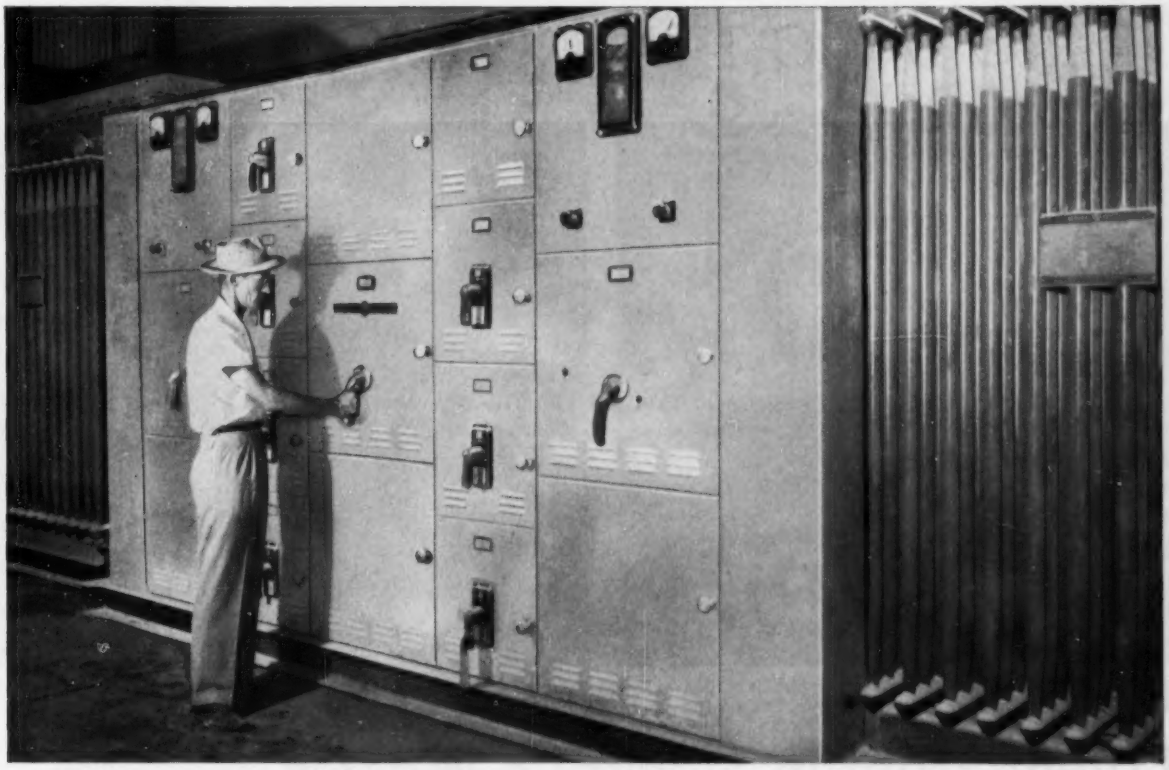
A subtle form of economic quackery is the use of such terms as "rationalism," "planning," and the "scientific" approach to economic and social questions. Words like these imply profound understanding on the part of the speaker and impugn the intelligence of anyone who ventures to question his views. They suggest that society can assure its salvation only by placing its fate in the hands of the experts.

In human affairs, who can arrogate to himself the title of "expert"? No small part of the economic and political ills that afflict the world today can be traced to centralized "planning" of production and distribution in the name of "rationalization."

Truly, the price of liberty is eternal vigilance—vigilance against the beguilements of words.

From the May issue of THE GUARANTY SURVEY, *monthly review of business and economic conditions published by Guaranty Trust Company of New York.*

The complete issue is available on request to our Main Office, 140 Broadway, New York 15, N. Y.



ADVICE: Replace open pole lines for primary distribution with armored cable. Install G-E double-ended load-center unit substation in ventilated room in center of load area.

RESULT: Fewer and better protected primary lines. Selective tripping of load-center circuit breakers limits secondary power outages to faulty lines. Additional units may be added in the future.

into efficient fertilizer producer

Step-by-step installation of G-E electrical system keeps production smooth at ex-superphosphate plant

A large chemical company operates a superphosphate plant built during World War II, which has been converted to the manufacture of a high-grade fertilizer. The plant's electrical equipment needed to be replaced—and without interrupting production.

General Electric engineers—called in on the problem—made an extensive plant survey and recommended a step-by-step electrical modernization program. The program as adopted combined latest techniques and modern equipment to effectively combat the extreme corrosion caused by sulphuric acid, phosphoric dust, and other chemicals.

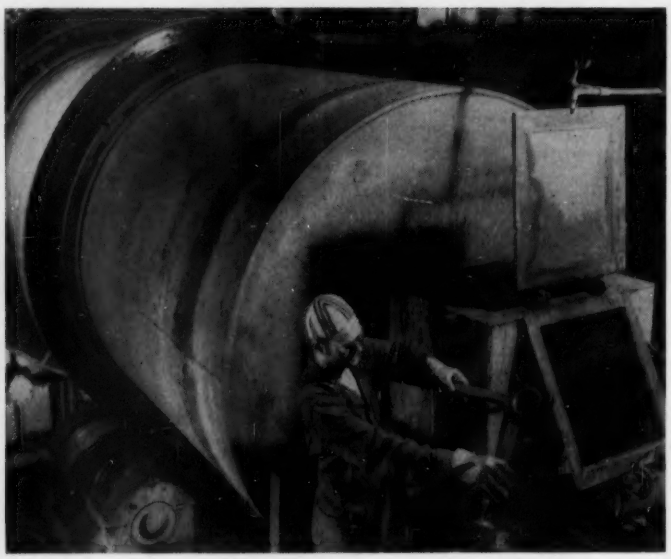
In succession, a compact G-E primary substation was installed in a ventilated room—vulnerable power lines were replaced with G-E armored cable—G-E unit substations were located near load centers to cut power losses—and open motors were replaced by G-E totally enclosed motors designed for chemical service. Result: the company reports complete satisfaction with the system.

Whether you plan to build, expand, or modernize a chemical plant, you too can profit by the services of G-E specialists in application and field engineering. These and other specialized engineering services are available to you through your local G-E Apparatus Sales representative. Call him early in your planning stage. General Electric Company, Schenectady 5, N. Y.

662-46

Engineered Electrical Systems for the Chemical Industry

GENERAL ELECTRIC



1 DILUTE, SPENT acid (essentially a solution of iron chloride) from smelter is preconcentrated (left), sent to the reaction drum (right) where it's mixed with iron turnings to form ferrous chloride. Other metallic impurities drop out as cements.

Latent Profit in Stockpile Wastes

The Reconstruction Finance Corp.'s Texas City tin smelter has been garnering more than its share of attention over the past few weeks. For there's a big question as to whether or not it will continue operations*

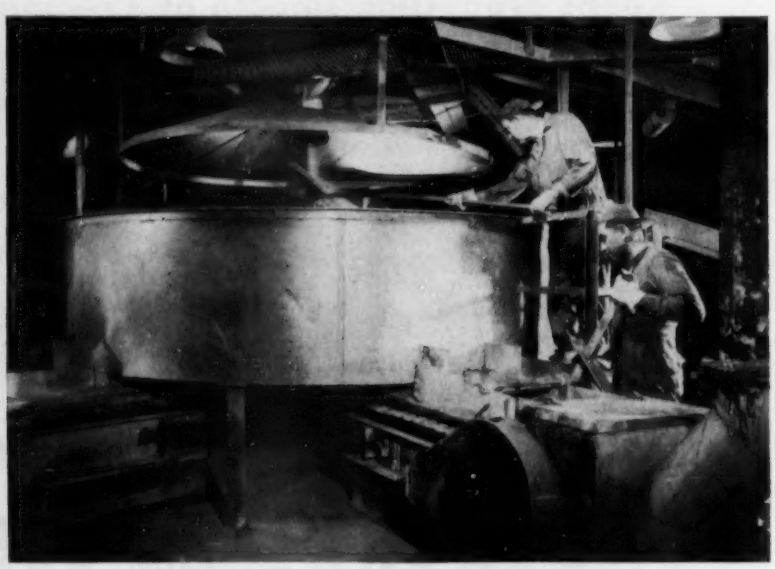
*Operated for the RFC by the Tin Processing Corp, the smelter is authorized under present legislation to run until June 30, 1956. The tin stockpile, however, is considered adequate, and the administration would like to shut it down right now. Hearings on the subject got under way last week.

after June 30. But while its immediate future is in doubt, the plant has been quietly consolidating its claim to a significant chemical engineering achievement: operation of a unique process for recovery of hydrochloric acid used in the smelting.

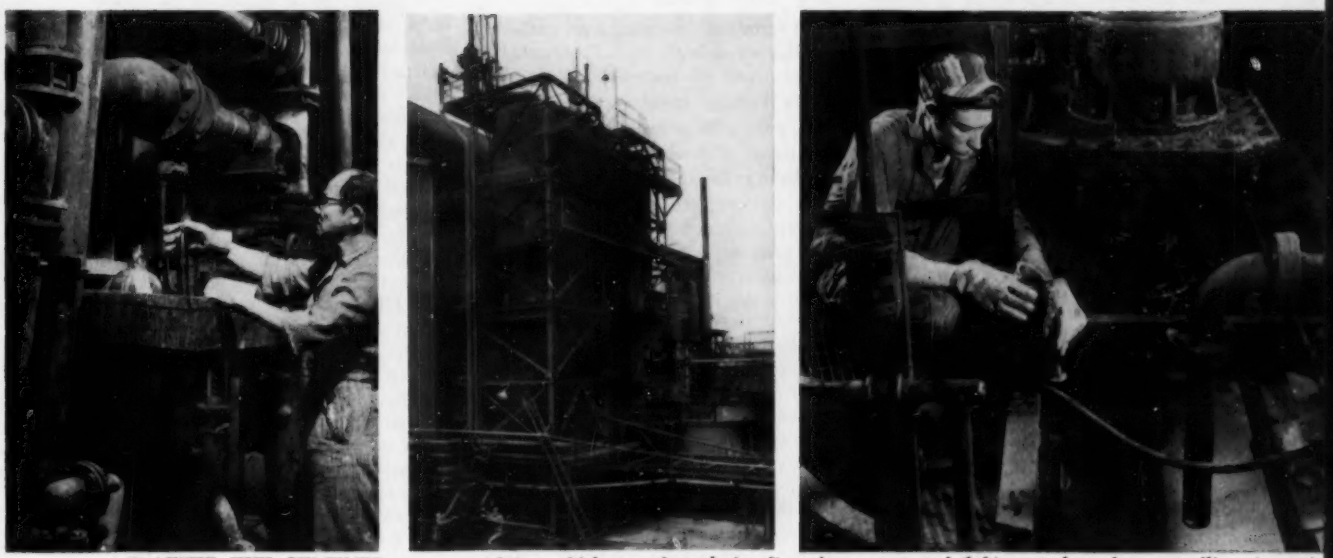
The Texas City smelter recovers about 600,000 gal. of 31.5% hydrochloric acid/month, about half of its total requirements for the acid. The process, moreover, eliminates a thorny waste disposal problem.

First to View: Touring the smelter last week, the CW CAMERA observed the process in operation, obtained the first integrated set of pictures to be approved by the RFC.

The spent liquor from the smelter actually consists of iron and other metal chlorides in solution with 20 gm./liter of free hydrochloric acid.



3 CRYSTALS ARE separated out in a rubber-lined centrifuge (right), and the mother liquor is returned to concentrator. Dried ferrous chloride crystals are conveyed to top floor and discharged into a furnace feed hopper (right), which feeds four apron feeders.



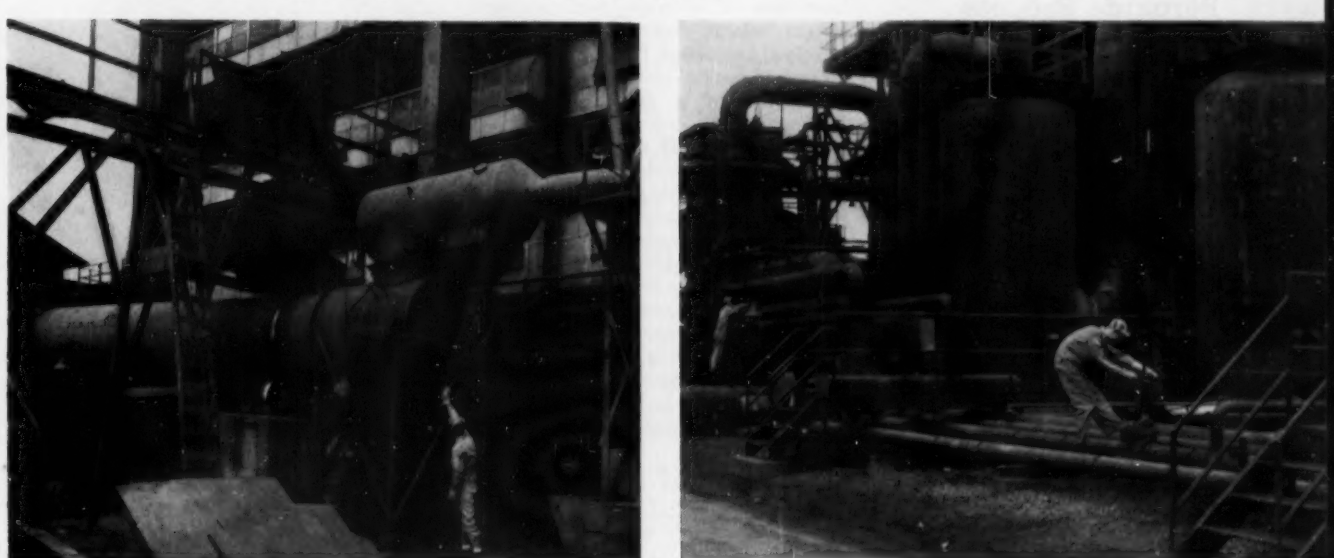
2 AFTER THE CEMENTS are removed in a thickener, the solution is again concentrated (left), sent through a crystallizer (center) to a settling tank (right). Product from the crystallizer runs about 94% ferrous chloride tetrahydrate.

The recovery is based on the reduction and separation of iron chloride, crystallization of ferric chloride as a hydrate, and finally oxidation to yield ferric oxide and hydrochloric acid. Here's how that's done:

Spent effluent from the smelter is stored in ponds, then transferred to a preconcentrator where the specific gravity (1.20) is raised to 1.25. It's then fed—at a rate of 60 gal./min.—to the slowly rotating (1 rpm) reaction drum. There, chlorides are reduced by mild steel scrap turnings that are introduced manually. Chlorides of arsenic, antimony, copper, bismuth and silver, which drop out as cements, are discharged, sent through a thickener and filtered. In this manner, about 1½ tons/day of cement is produced as a by-product. It includes 350 oz. of silver per long ton of cement, plus recoverable values of copper and bismuth.

The cement-free liquor is sent through another concentrator identical in construction to the first, and the gravity is raised from 1.28 to 1.48. Overflow goes by gravity to the vacuum crystallizers, which produce 13,000 crystals/hour. They run about 94% ferrous chloride tetrahydrate; 6% mixed hydrated chlorides of magnesium, aluminum, calcium, sodium and zinc.

The slurry of crystals is sent to a settling tank where the precipitated salts are thickened preparatory to centrifugation. The centrifuges have a cycle time of 15 mins., hold a charge of 800 lbs. of crystals. Next, the crystals are conveyed through a



4 IN THE FURNACE (left), iron chloride is oxidized to iron oxide and hydrogen chloride, which exits through a flue to the absorption system (right). Final product is 31.5% hydrochloric acid, containing small, noncritical amounts of iron.

dryer where the surface moisture and two molecules of the water of crystallization are driven off.

The dried crystals are elevated to the fifth floor of the building and then discharged into a Herreschoff furnace. There the hydrated ferrous chloride is oxidized to ferric oxide and hydrogen chloride. The oxide is discharged while the hydrogen chloride gas is removed through an insulated steel flue and through a dust settler to the absorption system. That's made up of four towers; one for cooling and scrubbing, another for condensing and stripping, a third for absorption, and the last one for tail gas scrubbing.

Final product of the recovery plant contains 365 gm./liter of hydrochloric acid and 7 gm./liter of iron. This small quantity of iron does not interfere with the leaching operations.

Stockpiling Wastes: Before the recovery system was installed, the smelter, which is stockpiling tin, was also stockpiling wastes. The spent liquor, in fact, had been accumulating in 17 ponds covering 60-70 acres. But this backlog is being worked off along with present production of spent liquor.

Designing and placing such a plant in operation is no small engineering feat. The men who brought it up to full operation—Vice President H. F. van der Laan, Waste Acid Plant Superintendent R. Owens, Chief Engineer W. Vierling and Maintenance Superintendent B. Looper—can take justifiable pride in that fact.

Peroxide Process

Easily qualifying as the process surprise of last week was word that Allied Chemical's Solvay Process Division had come up with a new, nonelectrolytic process to make hydrogen peroxide and that, further, the firm has started engineering and design work on a plant to exploit it.

Details of neither the process nor the plant are forthcoming as yet. About all that Solvay will say at the moment is that:

- The process involves a chemical oxidation reaction rather than electrolysis.
- It uses raw materials "that are mainly available within the Allied organization."
- The new plant will be built on the site of one of Solvay's present plants.

The only firm that's currently producing nonelectrolytic hydrogen peroxide is Du Pont (*CW, Aug. 15, '53, p. 78*).

By the Sea

Last fortnight, chemical men gathered at Harbor Island (N.C.) to get the latest word on corrosion, a problem that's costing industry over $6 billion/year. It was the 2nd Annual Chemical Corrosion Forum sponsored by International Nickel Co.

The visitors listened to Inco experts presenting data recently gathered at the company's Harbor Island laboratory; specific plant corrosion problems were brought up for discussion strictly "off the record"; and after the meetings, chemical men splintered off into two-or three-man groups to hash over further mutual corrosion difficulties, still "off the record". Inco's stake in the matter: good industry relations.

Though the weather was warm and the beach inviting, the visitors were there on business, stuck to the matter at hand. Inco's top corrosion expert, Frank LaQue, set the pace with a brief welcome, herded the group for a tour of the island test center and inspection of corrosion test apparatus.*

Forum Posers: Of prime interest to the conferees were stress effects on corrosion, effect of specific media on various metals and alloys, relationship of temperature and concentration to corrosion activity, caustic embrittlement and hydrogen embrittlement of metals, effectiveness of inhibitors, and relationship of velocity to corrosion.

Among the specific problems submitted by the visitors: accelerated corrosion of stainless steel reactors when velocity was increased in organic chlorinations, corrosion in stainless steel reactors due to the formation of complexes in the production of various glycols.

No one offered specific solutions; the use of high-nickel alloys in place of stainless was discouraged except in those instances where other properties were desired in addition to a potentially higher corrosion resistance.

Also covered: corrosion at elevated temperatures (specifically in those operations involving ammonia, hydrocarbons, hydroxides, nitrates, cyanides, chlorides, and fluorides), and industrial nickel plating and cladding.

*Set beside the sea, Harbor Island laboratory has a natural test environs in the fast-running ocean water and its incessant salt spray, but for those occasions where time is a factor, Inco experts have set up inside the laboratory spindle tests, jet tests, polarization tests, impingement tests and the like in order to accelerate test results, have just recently added a full-scale salt water evaporator and distillation unit to simulate true operating conditions in a corrosive setting.

Among the more important topics:

- Construction materials in operations involving the handling of CO-containing gas mixtures. The corrosion danger here is carbonyl formation. As suggested solutions of the problem, iron, nickel, and stainless were all bypassed in favor of copper, known to form carbonyls only if activated by mercury. It was quickly pointed out, however, that stainless, used in high pressure CO shipping containers, does not readily form carbonyl.
- Hidden and unexpected corrosion sources. Soot was pointed to as one potential danger worth keeping an eye on, has been known on occasion to form a galvanic terminal in a corrosion circuit. Another danger cited was the cracking of pipes due to carbon formation in the crevices of cracking units and Dow-Therm heat exchangers.
- Use of different metals in sulfur- or caustic-containing environs. Under certain conditions, nickel will react with sulfur to form nickel sulfide, which under elevated temperature will melt away. This erosion extracts nickel from alloys, leaves a metal residue that quickly breaks up.

Another problem results from the rising interest in molten sodium hydroxide as a heat transfer medium. At 1500 F in a caustic environment, it was maintained, mass transfer of nickel cladding may occur; and the broken off cladding fragments would easily clog the circulating system, cause a great deal of costly trouble. Somewhat at odds with this allegation were the satisfactory results obtained from the use of low-carbon nickel-alloyed equipment in the evaporation of caustic to fused caustic.

- Experiments with various corrosion inhibitors. One of the more interesting approaches to this subject is Du Pont's work with passive film coatings on different metals; silicon, so far, seems the most promising.

Also still in the development stage is the use of hydrazine to cut down on internal corrosion. The U.S. Navy, for one, is definitely interested.

Up for Solution: One of the more pressing problems raised was that of high-pressure ammonia reactors that cracked after only 2,000 hours operation. Experimenting with different types of steel reactors was the only solution offered. Other matters brought forth:

- Application of cathodic protection (equalizing potentials of cathodic and anodic areas through application of current in order to slow corrosion)

Chemicals you live by

Dry-blend faster, better with Diamond PVC-50

This is DIAMOND PVC-50 *after blending with plasticizers, stabilizer and lubricant. Notice the free-flowing character of the dry blend and the absence of caking and agglomerates.*

Comparative tests show that DIAMOND PVC-50 has exceptionally good dry-blending properties. The uniform high quality of DIAMOND resin permits ready absorption of the plasticizers and produces a free-flowing mixture that does not cake or ball-up, even when stored or shipped prior to processing.

These qualities of DIAMOND resin not only result in easier processability and a more uniform product, but in many cases eliminate the need for high-cost mixing equipment. Products made from DIAMOND PVC-50 have excellent heat stability and other valuable characteristics.

Why not investigate this great new source of PVC? For technical information and formula recommendations, call your nearest DIAMOND Sales Office or write DIAMOND ALKALI COMPANY, 300 Union Commerce Building, Cleveland 14, Ohio.

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DIAMOND ALKALI CHEMICALS

PRODUCTION . . . . .

to processing equipment, or more precisely, the lack of it in the chemical industries. Currently, work is being done on the cathodic protection of caustic reactors. Although such protection has already been applied to tank cars used in the shipping of caustic, many other problems arise as soon as the operation becomes more involved than a mere loading or unloading setup.

• Corrosion of cast iron and steel brine lines. It was pointed out that acid conditions as well as the presence of air or oxygen accelerate corrosion. One company reported that it had fair success with ammonia additions to the brine solution; another firm simply switched to polyester piping. Wyandotte Chemical disclosed that it had slashed annual maintenance cost on its lines to a third or a quarter of what it formerly was by going over to double-thickness steel brine lines.

• Corrosion in anhydrous environments, specifically in the processing of glycols and aimines. Still without solution, this problem is currently under study by Carbide and Carbon Chemicals, among others. One of Carbide's aims is an analysis of the breakdown of mono-ethanolamine in order to pinpoint the corrosion factor and, if possible, eliminate it or slow it down.

Was the corrosion forum worthwhile? American Cyanamid's Russell Gackenbach avowed he "wouldn't have missed it for anything", and that pretty well summed it up for the other representatives of major chemical processors.*

EQUIPMENT . . . .

Color Coded: Rubber Teck, Inc. (Los Angeles) is now offering a combination one-piece washer and rubber "O" ring called Duo-Seals. Designed to provide leak-proof sealing against fluids and gases, the units now available will fit around bolts 3/16 to 5/8 in. in diameter, are color-coded according to fuel, general-purpose, high-temperature or oil application.

•

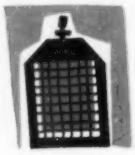
Follow the Gleam: Andrews-Knapp Construction Co., Inc. (New York) is opening a branch operation today in Sisterville (W.Va.). Sisterville was selected, says A-K, because it is cen-

*Chemical companies were well represented at Inco's corrosion forum. Among those present were: Allied, American Cyanamid, American Enka, Celanese, Chemical Products Corp., Diamond Alkali, Dow, Du Pont, Food Machinery & Chemical, B.F. Goodrich Chemical, General Aniline & Film, Hooker, Mathieson, Oldbury, Rohm & Haas, Union Carbide and Carbon, U. S. Industrial Chemicals, Wyandotte Chemical.

OXALIC ACID

Oxalic acid is a brilliant, transparent, colorless, crystalline material.

USES: Radiator cleaning compounds. Leather processing. Bleaching of straw, wood and cotton linters. Laundry sour for discharging bleach and removing iron stains. Washing coal. Removing rust stains from marble. Manufacture of metal polishes, blueprints, dyes, bluing. Purifying compound and precipitating agent. Analytical reagent. Reclaiming colored candles. Ink and rust remover. Purifying rosin. Cleaning railroad cars.



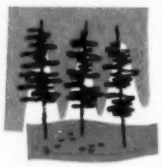
Remedy for Rusty Pipes

In automobile radiators, steel, hot water and air combine to produce rust and scale. Both are undesirable . . . particularly when they interfere with the cooling function of an automobile radiator. Nothing equals the ability of oxalic acid in keeping radiators clean and rust-free. Victor oxalic acid is one of the principal components of most nationally-known brands of auto radiator cleaners. It pays to see Victor.

SODIUM TRIPOLYPHOSPHATE

Sodium tripolyphosphate anhydrous, powdered or granular.

USES: Soap builder. Manufacture of detergents and water softeners. Purification of china clay. Conditioning oil drilling muds. Particularly effective in bar soaps; will not crystallize nor bloom. Disperses soap curds in hard water and eliminates scum. Clay dispersant. Deflocculant in raw cement slurries. Anti-pitch agent in paper making.



Wild Pitch Causes Loss

Paper making is a multi-million dollar industry in which phosphates play an important role. For example . . . Victor sodium tripolyphosphate and tetrasodium polyphosphate are used to remove wood tar or "pitch" from raw pulp that would cause "downgrading" if it were not taken out. In addition, Victor sodium phosphates are used to control water hardness. This prevents clogging of equipment and permits a better blending of water with pulp. Send for Technical Service Bulletin V1-52. It pays to see Victor.

DISODIUM PHOSPHATE, ANHYDROUS

Anhydrous disodium phosphate is a white, crystalline material of food grade purity. Also available, disodium phosphate duohydrate, a white, crystalline material which complies with Food and Drug Laws in purity.

USES: Boiler water treatment. Tin weighting of silk. Textile process waters. Buffer in dye-baths. Casein emulsifier. Processing of cheese. Manufacture of pharmaceuticals, and evaporated milk. Pumping pickle for canned meats.

Plug for Wisconsin

Children love it for lunch. Melted, it makes a tasty sandwich. Blended, it makes a splendid sauce. *It's delicious process cheese.* To give process cheese its smooth, creamy texture, cheesemakers call for Victor's disodium phosphate. Without it, process cheese would be crumbly and unappetizing in appearance. With it, process cheese sales have had a steady, healthy growth. It pays to see Victor.

HCOOH

FORMIC ACID

Formic acid is a fuming, colorless, corrosive liquid that evaporates completely on exposure to the air. It has a characteristic pungent, penetrating odor, and is milder than muriatic or sulphuric acid; considerably more active than acetic acid.

USES: Tanning. Acidifying dye-baths. Souring in laundries. Plating baths. Manufacturing formates, fumigants, insecticides, pharmaceuticals, antibiotics, refrigerants, solvents for perfumes, and lacquers. Wire stripping compounds.

Never Underestimate the Power of a Woman

By and large, men dye for women. The constant search for new colors and shades rests largely on the female fashion whim. Finding color variations is relatively simple. Matching these shades in various textiles and weaves is another story. Victor formic acid, diammonium phosphate, and other phosphates help dyers do their job faster, more accurately and with a minimum of risk. New applications for the textile industry are in the process of development. Write for details.

Victawet

SURFACE-ACTIVE PHOSPHORUS COMPOUNDS

Victawet® 35B. Anionic. 70% paste. Soluble in water. Sparingly soluble in alcohol. Non-foaming.

Victawet® 58B. Anionic. 70% paste. Soluble in water. Sparingly soluble in alcohol. Used where clear water solution and small amounts of foam are desirable.

Victawet® 12. Non-ionic. 100% active liquid. Soluble in alcohols. Insoluble in naphtha. Milky solution in water. Non-foaming.

Victamines C & D.
(U. S. Pat. 2406423) Cationic. 100% active. Disperse in water. Soluble in alcohols, ether, kerosene, toluene.

Wetter Water Works Wonders

Reducing the surface tension of water increases the ability to penetrate, spread or "soak." In metal cleaning, for example, the use of a Victor wetting agent in the cleaning solution assures a more rapid, more thorough coverage of the surface to be cleaned. Faster cleaning and better cleaning often results. Many industries such as the textile, paper, detergent, laundry and chemical industries have found profitable use of such Victor wetting agents as Victawet 35B, 58B, 12 or Victamines C and D. It pays to see Victor.

$Al(OOCH)_2OH$

ALUMINUM FORMATE

Aluminum formate, basic (solution), U. S. Pat. 2154170, is a colorless solution containing 8.5% aluminum oxide (Al_2O_3), and mildly acid in reaction.

Specific gravity of 1.15–19° Baumé

USES: Waterproofing. Mordanting. Anti-perspirant compounds.

Solution for Stormy Weather

Ever wonder why a trench coat stays dry inside when it's raining "cats and dogs" outside? Victor aluminum formate provides part of the answer. Combined with waxes and other ingredients, aluminum formate makes a water-repellent coating for textiles and paper.

VICTOR

Dependable Name in Chemicals for 56 Years

H_3PO_4

PHOSPHORIC ACID

Phosphoric acid is a clear, colorless, sparkling liquid. All grades meet the requirements of the Federal and State Pure Food Laws.

Concentrations: 75%, 80%, 85% N.F.
115% (Polyphosphoric)

USES: Manufacture of yeast, sugar, soft drinks, imitation jellies, gelatin, and pharmaceuticals. Rustproofing, engraving, railroad car cleaning, refining oil and gasoline, preserving silage. Weighting silk, and dyeing textiles. Chemical polishing and electro-polishing metals, bright-dip baths for aluminum. Manufacture of phosphates, dental cements, glue, ceramics, glass, metal treating compounds, explosives, and fertilizers.

Start of a Beautiful Finish

Victor phosphoric acid is giving many companies a brighter look on profits. Chemical or electro-polishing baths containing phosphoric acid are replacing mechanical buffing for the finishing of products made of stainless steel, aluminum and other metals which can be given a bright, shiny finish (inside and out) in a few minutes. Here is another example of how Victor helps industry find faster, lower cost or better production methods. It pays to see Victor.

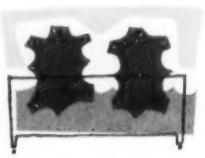
$HCOONa$

SODIUM FORMATE

TRADE MARK — Protan®

Protan® sodium formate is a white, odorless powder, soluble in water.

USES: Chrome tanning. Neutralization of leather. Wallpaper printing. Plating baths. Reducing agent. Blueprint developers. Neutralizer for carbonized wool.



Tanning Takes Time

Speeding tanning time interests every leather tanner. Victor sodium formate helps turn the trick. When sodium formate is added to chrome tanning solutions, the chrome liquors are stabilized, and rapid, uniform penetration of the leather takes place. Fixation is increased and more chrome is exhausted from the solution. In addition to other advantages, leather is produced with greater smoothness and fullness. Sodium formate is the most effective of the chrome tanning masking agents. Further proof that it pays to see Victor.

plants and offices of VICTOR CHEMICALS

it pays to see

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Dependable Name in Chemicals
for 56 Years

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141 West Jackson Boulevard

Chicago 4, Illinois

trally located to the Ohio River Valley, West Virginia and southwestern Pennsylvania areas which recent economic changes indicate will become an increasingly large chemical industry center. The branch operation will continue in the company's line of lead fabrication and construction.

•

Steam Strainer: Schutte & Koerting Co. (Cornwells Heights, Pa.) has incorporated a pressure seal bonnet construction in its new Sk Fig 994-HP Strainer for steam and boiler feed pressures above 900 lbs. A more compact unit, declares S&K, is made possible through use of the pressure seal, which becomes tighter as the pressure increases. The necessity for a bulky cover with large studs and nuts is eliminated.

•

Designing for the Cold: Textron, Inc. and Kaiser Motors have formed Textronics, Inc., a firm that will specialize in equipment for low-temperature operations, it was revealed last week by Edgar F. Kaiser, president of Kaiser Motors, and Royal Little, chairman of the board of Textron, Inc. The two men will not elaborate on the nature of the new firm's activities, say merely that it will be involved in the "metal fabrication of equipment for use at extremely low temperatures," and that although the immediate production will be for the military, eventually the firm will market its wares to civilian customers as well.

Research consultant and prime contractor for the firm will be Arthur D. Little, Inc. (Cambridge, Mass.). Textronics, which will act in the role of subcontractor, is already starting work on a plant in Nashua, N. H., which will employ about 200 people. Kaiser will draw some of the technicians for the task from the group working with the National Bureau of Standards and the Navy Dept.'s Bureau of Aeronautics on Project Tinkertoy (the system for the automatic production of electronic equipment). Kaiser's electronic division is currently operating plants in Nashua and in Alexandria (Va.) using the Tinkertoy principle.

•

Precision Filler: Bartelt Engineering Co. (Rockford, Ill.) declares it has the answer to precision filling needs. Its new unit, says Bartelt, will make up to 150 fills per minute of liquid, powder or viscous material while holding filling tolerances to within ± 1% of the exact fill. The unit has a spun stainless steel hopper with quick-release clamps for cleaning and

a complete range of interchangeable feeder toolings.

•

Meter Pump: Milton Roy Co. (Philadelphia) is marketing a new, motor-driven controlled-volume pump for use in proportional feed systems. The units will pump against discharge pressures up to 50,000 psi., come in capacities ranging from 1 pt. to 1,350 gal./hour. In response to an electrical signal, a mechanical, single-revolution clutch arrangement permits one stroke of the pump to effect feed of an additive in proportion to main-line flow rate.

•

Name Change: Precision Machine Co. (Somerville, Mass.) has changed its name to Precision Chemical Pump Corp. The firm will continue production of chemical pumps and slurry pumps at the same address.

•

Big Show: Clapp & Poliak, Inc. (New York) has already scheduled the next Materials Handling Exposition for the week of May 16, 1955. The biggest one yet, claims founder and producer C&P, the show will be held in Chicago's International Amphitheatre, will occupy 420,000 sq. ft. of indoor area with an expected exhibit of 5,000 machines used in the modern automatic factory. Theme of the exposition: the concept of obsolescence.

Traveling Bondsman

THIS WORKER is bonding Goodyear rubber lining to the interior of chemical process equipment. Although the firm can handle equipment as large as railroad tank cars in its own shops, it's now doing lining projects in the field.

you *COULD* make STEARATES in your bathtub...

...BUT that's far from the way we make them at Metasap. Here you find the extreme opposite pole from the stearates produced in the familiar "bathtub ring." Here we use the most modern filters and magnetic traps to remove every minute vestige of foreign material. Here gleaming stainless steel and Monel equipment guard against any trace of rust. Even the air is filtered, to keep out contamination. And Metasap maintains what we believe to be the most rigid methods known, to insure quality control both of raw materials and of the finished products we ship to you. Yes, you *can* make stearates without painstaking care like this —but not *Metasap** Stearates.

The following partial list of industries served by Metasap indicates the extensive scope of Metasap Service and the remarkable versatility of Metasap Metallic Soaps:

PAINT—Paint makers are solving pigment suspension problems with Metasap Stearates; producing primers and sanding sealers that have excellent filling qualities.

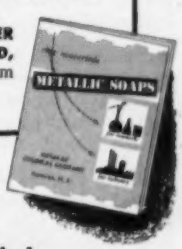
LACQUER AND VARNISH—Lacquer and varnish makers are using Metasap Metallic Soaps to assure efficient flatting, and to obtain marproof finishes.

PLASTICS—Molders are using Metasap Calcium, Zinc, and Barium Stearates to improve internal lubrication, which assures superior preforms, better finished products, longer mold life.

RUBBER—Processors are using Metasap Zinc and Magnesium Stearates to lubricate molds and prevent uncured stock from sticking.

LUBRICANTS—Grease makers are using Metasap Stearates because these outstanding soaps afford a wide range of quality bases that help producers to meet any grease specifications.

THE PAPER, TEXTILE, COSMETIC AND OTHER INDUSTRIES, AND THE CONSTRUCTION FIELD, all call upon Metasap Stearates to perform important services.



Send for our informative free book: "Metallic Soaps for Research and Industry."

*REG. U.S. PAT. OFF.

METASAP CHEMICAL COMPANY

METASAP CHEMICAL COMPANY, Harrison, N. J.

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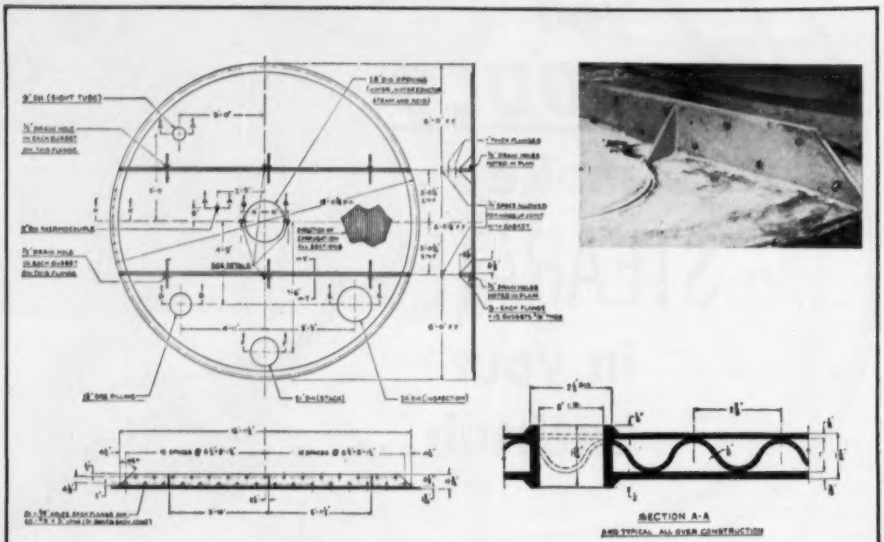
Stearates

of Calcium • Aluminum • Lead • Magnesium • Zinc

consult HAVEG . . . America's first molder of corrosion-resistant plastic equipment

P-G TANKS for metal finishing withstand acid attack, are non-conductors of electricity, can take hard knocks.

P-G FUME DUCT is molded into complete fume removal systems. Duct is easily installed, does not require elaborate supports.



HAVEG BUILT THIS P-G COVER FOR AN ACID STORAGE TANK. It replaced a wooden one with a service life of less than a year. A special corrugated reinforcement (see Section A-A) also of P-G, increased the cover's strength, reduced the weight. From design to installation, Haveg engineers worked closely with the plant engineers, made sure by return inspection that true value had been received. In fact, the customer recently ordered another P-G cover for an adjacent tank in the same service.

FOR COOLING TOWERS • FUME DUCT • TANKS • COVERS • LININGS • PIPE

of P-G laminated polyester glass

Both users and manufacturers of cooling towers, and similar structures subject to corrosive liquids and gases, can profit by relying on the accumulated engineering skill of the Haveg Corporation, which is now making polyester glass laminated plastic equipment.

Polyester glass is lightweight, low-cost, easy to fabricate and install. It resists many corrosives. Haveg P-G (polyester-glass) products are satisfactory for continuous operation at temperatures about 200°F., and for intermittent service as high as 240°F.

Molding plastics into corrosion-resistant equipment is not a new venture for Haveg. Over twenty years ago Haveg introduced a new plastic material . . . Haveg . . . made from acid-digested asbestos mixed with special Haveg resins. Haveg has been made into the biggest molded plastic tanks in the world, into a 200′ high fume stack, into giant petrochemical installations.

Like any other construction material, Haveg 41 and 60 and the new P-G materials sometimes present problems in design, manufacture, installation, or economics of selection. In the end, the purchaser must rely on the experience and reputation of the supplier. So Haveg makes these promises:

1. Polyester glass will be recommended and supplied only after complete testing and full consultation with your plant engineers.

2. Haveg will use its broad experience in fighting corrosion to tell you if P-G is the best material. A reference file of installations plus systematic progress reports where available will be a valuable source of information.

Haveg P-G is new. It promises good dividends in many applications. But it calls for close cooperation between Haveg and the user. Call the Haveg sales engineer listed. Tell us your problem . . . together we will find if Haveg P-G fits your needs!

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CINCINNATI 36, Sycamore 2600 • CLEVELAND 20, Washington 1-8700
DETROIT 35, Broadway 3-0880 • HOUSTON 4, Jackson 6840
LOS ANGELES 14, Mutual 1105 • SEATTLE 7, Hemlock 1351
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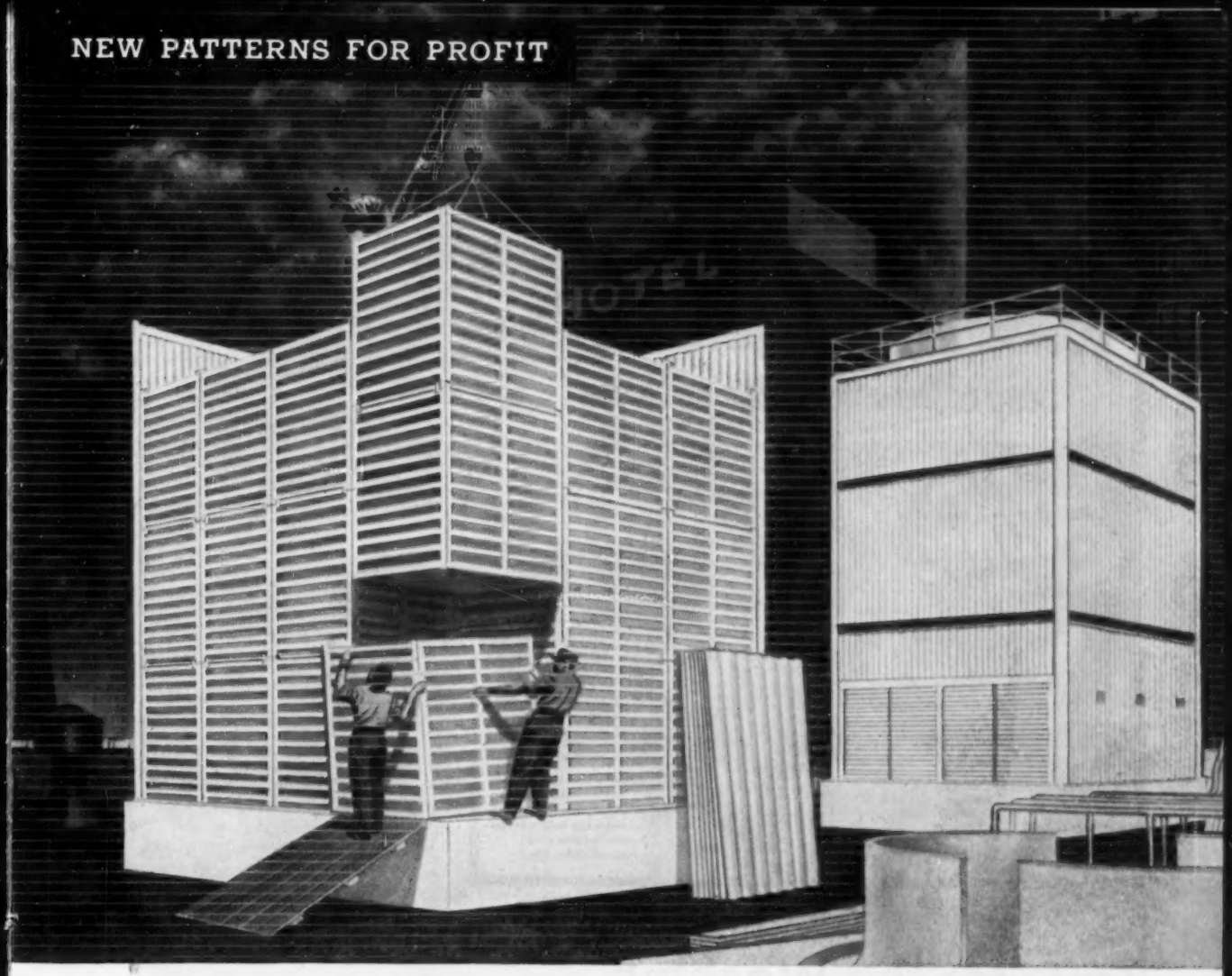
A SUBSIDIARY OF CONTINENTAL-DIAMOND FIBRE CO

NEW PATTERNS FOR PROFIT



Will Water Cooling Towers of Reinforced Plastic Cut Upkeep Costs . . . Last Years Longer?

Polyester glass fiber laminate may be the answer . . . where highly alkaline cooling water delignifies wooden towers . . . and where building codes prohibit wooden towers as a fire hazard. The same materials now used for chemical storage tanks, sport cars, corrugated translucent building panels, and molded boats might be uniquely suited for cooling towers . . . designed with simple molded components that could be quickly erected. With colored resins, such a tower would be highly attractive for theatre and hotel air conditioning.

Reinforced plastics are strong, rotproof, and corrosion resistant. Monsanto customers produce fire-resistant resins for bonding fibrous glass moldings which would make reinforced plastic cooling towers noncombustible.

Note the construction of the cooling tower shown.

It is self-supporting with heavy corrugated panel sides; no columns are needed. "Filling" can be continuously extruded. Monsanto customers can custom mold the tower components—and remember only ten moldings are needed.

Firms ***using*** cooling towers or cooling tower ***manufacturing*** companies who would like to investigate the possibilities of a reinforced plastic tower are invited to contact Monsanto.

If you would like a set of engineering drawings that shows the tower's components, its assembly, side panels, roof and typical filling section . . . send $1.00 to cover cost of handling and mailing to **MONSANTO CHEMICAL COMPANY,** Plastic Division, Dept. C, Springfield, Massachusetts.

Monsanto is a major producer of **STYRENE MONOMER, PHTHALIC** and **MALEIC ANHYDRIDES, FUMARIC ACID,** basic raw materials used in the manufacture of polyester resins.

MONSANTO
CHEMICALS – PLASTICS

SERVING INDUSTRY . . . WHICH SERVES MANKIND

LEVER LEAVES it to the ladies to prove the appeal of tinted detergents.

Tints for the Washtub

Touting its Rinso Blue, Lever Bros. joins P&G and Colgate in soap's "Big Three" with a colored synthetic detergent.

Consumer appeal is the only reason for coloring. There's hope it can give new—and needed—life to detergent promotion. The tinted products seem to appeal to housewives.

Blue's the favored color now, but other shades are being tried.

"Boys and Girls Come Out to Play," a time-worn tune, is getting new life these days. It's all part of the singing commercial, newspaper and magazine broadside to promote Lever Bros'. new laundering pair, Rinso White (soap), Rinso Blue (syndet, *CW, April 17*).

Besides promoting its washing compounds, the ads are plain notice that Lever has joined the other two (Colgate, P&G) of soap's "Big Three" in offering a tinted synthetic detergent.

Colored detergents, a formulation twist that gained national prominence about two years ago with the introduction of Blue Cheer by Procter & Gamble, have now snared a goodly portion of the market.

Their impact has been doubly surprising, since in all cases, the "blued" product has been only the running mate of the firm's top-selling detergent. (Colgate did introduce its blue detergent under the Fab label, but it has since switched over to Super Suds to carry the color banner.)

And though Rinso makes a blue detergent, indications are that soapers are just beginning to try their hands at decorating detergents. Already in Omaha, Neb., P&G has test-marketed Pink Dreft, a product said to have more than a tinting agent relating it to Blue Cheer.

Laundering Rainbow: Also, it's frank talk among the big soapers that they've been testing washing products in nearly every other tint available. With so many other products sold largely on color appeal, it's little wonder that soap makers have joined the game.

The pastel shadings for synthetic detergents are distinct from the familiar golden tone of many laundry bar soaps, where the color is caused by addition of rosin. But it has put a positive value on making soap products uniform by using pigments—long a practice of industry.

A point in the Rinso advertisements that has generated a lot of interest is the claim that Rinso Blue "blues" as it washes. Although most housewives are convinced that Blue Fab or Cheer or Supersuds will blue their washes, the makers of these products have stoutly denied that the coloring agent has any bluing value.

Blueless Blue: Apparently, Lever's claim depends on your definition of bluing. When queried, Lever says the bluing is produced by Solium—and Solium is Rinso's optical whitener.

To Lever, then, bluing has come to mean any process that boosts the whiteness and brightness. But to many soapers, bluing still means the faint blue cast produced by traces of Prussian blue.

The Lever claim has given rise to some thought that the tinting material used is a dye. Competitive products have been colored with blue pigments, which have no ability to color any fabric. Lever assures CW that Rinso contains a pigment.

In coloring soaps and detergents, both pigments and dyes can be used. In heavy-duty cleaning compounds, intended mainly for cottons, it's possible to use an acid dye. Acid dyes are designed for wool, but under ordinary laundering conditions, they aren't in a bath acidic enough to make them exhaust on any fiber.

There's little trick to adding a coloring agent. With bar soaps, where both dyes and pigments are quite common, the agent is generally added in the amalgamator. With soap flakes, the addition is made at the crutcher, as it is in the case of spray-dried detergents. Very little is required: 0.1-0.3% will tint satisfactorily, and it won't raise soap cost more than a few cents per case.

Who's Next: So far, only the big soap companies have colored their major laundry products. None has indicated any decision, however, to

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From the cottonseed, A. Gross & Company produces for you Distilled Cottonseed Fatty Acids used in the manufacture of soaps, polishes, insecticides, lubricating greases, alkyd resins, adhesives, buffing compounds, grease sticks, and for the compounding of rubber.

. . . let A. Gross be yours

If you are looking for HIGH FATTY ACID CONTENT at low price, or a double distilled grade where the essential requirement is light coloration, A. Gross & Company should be your source of supply for Cottonseed Fatty Acids.

Send for samples and our catalog "Fatty Acids in Modern Industry."

	GROCO 35 — DOUBLE DISTILLED		GROCO 30 — DISTILLED	
Titre	36°— 39° C.		33°— 36° C.	
Lovibond 5¼" Red	1.0 —	2.0	5 —	10
Lovibond 5¼" Yellow	5 —	15	30 —	50
Color Gardner 1933	1 —	3		
Unsaponifiable	1.5% max.		2.0% max.	
Saponification Value	201 —	206	200 —	204
Acid Value	200 —	205	199 —	203
Iodine Value (WIJS)	90 —	100	95 —	110

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start tinting its number one synthetic detergent.

CW also queried a number of other leading soap companies on whether they have plans to introduce a colored product.

Armour hasn't a tinted product now, but reserves comment about its future plans. Armour has a policy of aggressive merchandising, and few would be surprised if it tried coloring.

Fels & Co. (Philadelphia), best known for its golden-toned bar soaps and flakes, has a white detergent, and isn't planning to "tone" it now. Its soaps, with a color due chiefly to rosin, would be difficult to tint.

Iowa Soap Co. (Burlington, Ia.) has it's Magic Washer, a white product that it intends to keep white. But it has done extensive testing with coloring, says it would try a new tradename for any tinted detergent.

Monsanto, which has given its All a brisk promotion in recent months, says it has no plans for coloring it. There has been talk, however, that a "sudsier" All may be tried.

Swift (Chicago) doesn't offer a tinted product now, plans none.

Ultra Chemical Works (Paterson, N. J.) is best known for Sail, the detergent sold by A&P stores; Sail will remain white for the time being.

Wrisley (Chicago) is sticking with white, points out that the problems of cleaning up and avoiding contamination of other products is difficult for a small soaper that can't devote one line exclusively to a single product.

New Slants: In their brief life so far, the colored detergents have given promotion specialists a brand new thing to play with. And, as some authorities say, it's about time. Recent studies on consumer feelings toward soap and detergent buying indicate that the saucer-eyed, open-mouthed woman looking at a box of soap *(see cut)* has become so stereotyped that there is no longer any product identification.

The lightness, cleanness, brightness pitch has been overdone, says the Chicago *Tribune*,* and it warns about using a technical motif for selling a product to the housewife. But it did commend the introduction of the blue in Blue Cheer as being a novel touch.

Colors have also been put to advantage in selling other types of cleaning and washing products. And, like perfuming, the addition has paid off. Woodwork cleaners have dyes now; even powder bleaches have been offered in light-blue tints. Scouring powders may be employing the idea, too—A. C. Houser's about-to-be-patented cleanser turns blue in water, is eyed by several soap makers as a new cleaning powder gimmick.

The colors are attractive, and they reinforce the claims that housewives are getting a new product. And there's everything to gain by these efforts to brighten the dull tasks of cleaning.

*In a study by Social Research, Inc., "Motivation Relating to Soaps and Detergents," copies available from the *Tribune*.

Back to the Soil

Part of its plan to broaden outlets for molybdenum chemicals, Climax Molybdenum Co. has been eyeing the farm. Its pitch: moly is a vital micronutrient for fertilizers.

Already, the plan appears to have borne fruit in New Zealand and Australia. There farmers have been able to put new fertility into formerly barren country by applying as little as 2.5 oz. of sodium molybdate per acre. Frequently the moly has been spread by air; planes, carrying a fortified top-dressing, dust or spray areas too rugged to be reached in other ways.

Studies indicate that sufficient moly is present in most soils but is available to plants only if the soil is alkaline. Hence in earth that isn't moly short (and as with all trace nutrients, very little is required), heavy liming can make the moly available. But, Climax likes to point out, why use a ton of lime where 2 oz. of sodium molybdate will do the trick?

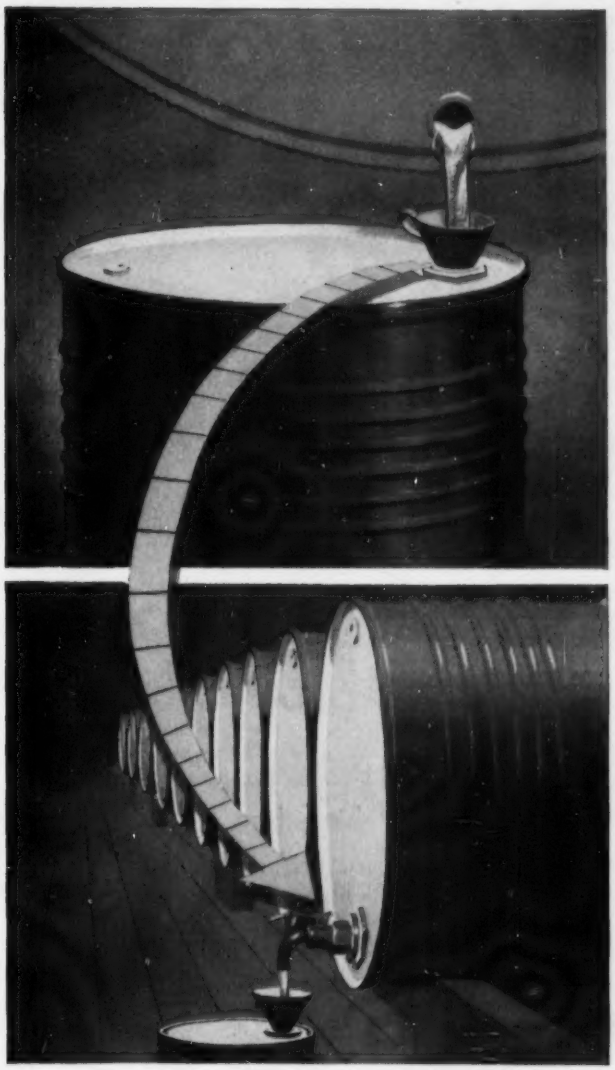
Even at that low rate, New Zealand uses 30,000 lbs. of metallic moly (in compound) yearly for agricultural applications; Australia, 13,000. In this country, some 6,000 lbs. are applied, mostly in Florida, on citrus crops. It's still, of course, just a trifling portion of the 28 million lbs. of moly consumed yearly.

Generally, for farm applications, sodium molybdate is employed.* It's made by dissolving the oxide in caustic, crystalling out the sodium salt. The oxide can be used, although its lower solubility makes it harder to mix into fertilizers.

And fertilizer makers are visualized as being best able to use the moly. Right now it isn't widely used here as a micronutrient, although putting in the suggested 2 lbs./ton of the sodium salt would cost under $2. Climax feels there are many areas of the U. S. that need the moly addition, and it's a back-to-the-soil move that's bound to harvest a profit.

* Suppliers include J. T. Baker Chemical Co. (Phillipsburg, N.J.); City Chemical Co. (New York); Molybdenum Corp. of America (New York); North Metal & Chemical Co. (York, Pa.); S. W. Shattuck Chemical Co. (Denver, Colo.).

Do you go all the way with quality control?



After so carefully maintaining the highest possible standards of quality during the manufacture of your products, it will pay you to protect that product quality during *shipping*, too. USS scale-free, rust-inhibited Drums will *keep* your products clean and uncontaminated. There is no grease, dirt or scale in a USS Steel Drum to affect its contents. A surface absolutely clean—physically and chemically—is covered with a tightly adherent, truly effective rust-inhibiting coating.

This means that USS Steel Drums are better for you . . . better for your customers. It means that you now have a dependable means of guarding the quality of your products *after* they leave your plant . . . that you can now take advantage of the great strength and durability of steel drums, and at the same time, be sure of contamination-free shipment and storage of products.

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LIGHT SLEEPER: For mattresses, half as heavy as foam rubber.

Blowing Up Polyester

"The greatest advance in cushioning since foam rubber". That's the glowing way Hudson Foam Plastics Corp. (Yonkers, N.Y.) is heralding its newest product. A polyester foam, it's called Permafoam.

Company head Oscar Shuffman and research director Christopher Wilson see it "obsoleting" foam rubber. Whether Permafoam will play the role they have assigned to it is not clear. But one thing is certain: plenty of firms are watching what course it takes. Here's the picture.

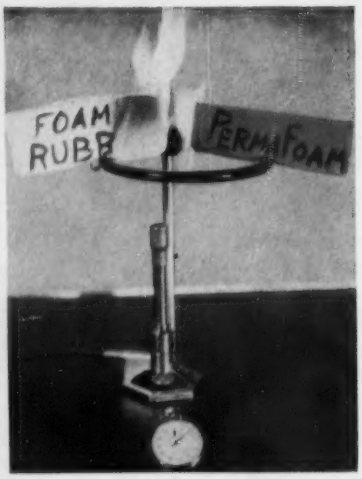
Lucky Third: Last December Hudson started pushing Permafoam, after first spot-testing it for two years. By the time September rolls around, the company expects to have a new plant which will mean that Permafoam production will equal its present output of foam rubber. By next January it expects to have completely switched over to Permafoam.

HUDSON'S WILSON: Putting the squeeze on tough, new foam.

Hudson got its start in foam products right after World War II when, like many other companies, it began manufacturing foam rubber for cushions, pillows and molded articles. Later it went into polyvinyl chloride foam as well. But when it came upon Permafoam (about five years ago) it foresaw the day when it could concentrate exclusively on this polyester product.

The claims for Permafoam are not few in number. Hudson asserts it is flame-retardant, half the weight of and four times stronger than foam rubber, sewable, washable in soap and water, non-allergenic, odorless, usable in contact with vinyl plastic film. Other claims: it can be dry-cleaned, will not oxidize, will not flake or shred, and is unaffected by oils, cleaning fluids, perspiration. As for price, it's comparable with medium-density foam rubber.

These assertions have rubbed several foam makers the wrong way. Some say many of the claims are extravagant and "they could do harm" to other expanded products—many of which are still in the developmental stage.



TRIAL BY FIRE: Charred, not flaming, after bunsen-burned.

Particularly critical are firms making foamed vinyls, which have regarded their own products as the logical successors to foam rubber, partly because of lower price and partly because they too possess many properties foam rubber lacks.

Unique Position: At present Hudson is not worried about its critics. It's too pleased with the unique position it finds itself in. It feels it has jumped the gun on some other competitors which have also worked on polyester foams but have dallied in pushing them.

At least one major rubber company has a polyester foam. It also is fire-resistant, doesn't suffer when exposed to oil or grease, has higher compression values and greater tensile strength than has rubber. Its producer doesn't say its polyester will supersede foam rubber, but at the same time it doesn't rule out the possibility. Nor has it said when it will be made on a commercial basis.

But it's not only rubber concerns that are interested in what Hudson does. So are manufacturers of isocyanates. To understand why, it's necessary to take a closer look at a polyester like Chemigum SL, which is Goodyear's new type of synthetic rubber (*CW, Feb. 7 & July 4, '53*).

It is almost identical to Vulcollan, the German synthetic, which is a polyester formed by the condensation of glycols and adipic acid with a cross-linking diisocyanate. According to reports, tire treads of Chemigum SL show two to five times greater wear-resistance than those made from the best cold GR-S. Among the things holding it back, one has been the lack of the right diisocyanates at a reasonable cost, Goodyear explains.*

New Plant: Now there's a chance the situation will improve. Reason: the greater emphasis on isocyanates in general. Specifically, just last month Monsanto joined with the Bayer Dye Works (maker of Vulcollan) of Leverkusen, Germany in setting up a jointly owned company to build a plant in this country (*CW, May 1*).

Since Bayer is known to be a leader in diisocyanates, this could very well mean "the right diisocyanates at a reasonable cost." (Heretofore, Goodyear has been obliged to import them or to make them on little more than laboratory scale.)

The reason that isocyanates manufacturers are interested in Hudson is that Permafoam, too, is not a straight polyester but a polyester-isocyanate.† Should it go over, it would open up a new market for isocyanates.

But interest is not merely one way. Like other companies, Hudson would like to know what the Monsanto-Bayer plant will actually turn out. The explanation: in Germany, Bayer makes a product similar to Permafoam. It goes by the name of Multiprene and is the foamed version of Vulcollan. (While it's not reported whether Multiprene will be produced here, one polyester manufacturer says Vulcollan will be—though under a different name.)

Skeptics Opine: All the foregoing would seem to indicate that Permafoam's position will not go unchallenged. Some skeptics wonder how strong that position actually is. They say that Hudson is not currently manufacturing Permafoam but imports it in sheets from some foreign concern which is located in either Holland or Germany.

Hudson denies this. It insists, "We have our own process and our own patents." Furthermore, it says, "We make our own polyester because it's a special one."

In Hudson's estimation, all sorts of uses loom for Permafoam—as cushioning for upholstering and bedding, in filters, gaskets, acoustics, for packaging delicate instruments, padding garments, thermal insulation. It's said to be bondable with adhesives to textiles and vinyl sheeting, to be heat-sealable to other thermoplastic materials in quilted or embossed patterns. It's available in open- or closed-cell form, or in a combination of the two. Thickness varies from ⅛ in. to 3 in.

With such a background, it's clear

*Current price of isocyanates is around $4/lb.

†Also in the expanded plastics field is alkyd-isocyanate, a more rigid type which is licensed by Lockheed Aircraft.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND

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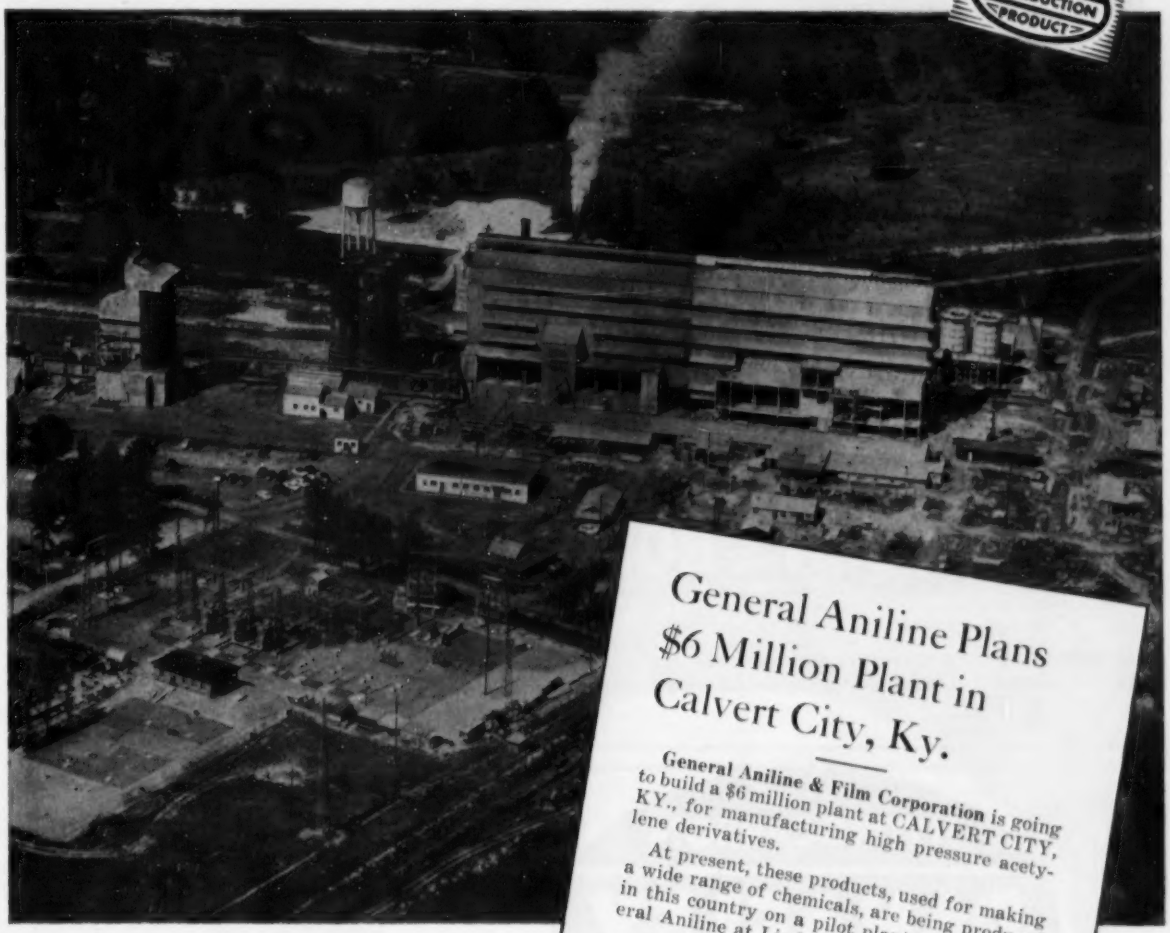

General Aniline Plans $6 Million Plant in Calvert City, Ky.

General Aniline & Film Corporation is going to build a $6 million plant at CALVERT CITY, KY., for manufacturing high pressure acetylene derivatives.

At present, these products, used for making a wide range of chemicals, are being produced in this country on a pilot plant scale by General Aniline at Linden, N. J.

Another great name comes to America's growing chemical center

General Aniline & Film Corporation joins the chemical community in Calvert City with a new plant expected to be in operation by the end of 1955. GAF's research in high pressure acetylene chemistry has provided many interesting products — among which are propargyl alcohol, butynediol, butanediol, butyrolactone, pyrrolidones, polyvinylpyrrolidone (PVP), vinyl ethers and esters and vinyl ether co-polymers. Pipeline acetylene will be furnished by National Carbide, who also serves two plants of the B. F. Goodrich Chemical Company at Calvert City.

Calvert City is the ideal location for any company engaged in processing acetylene-based products. Situated on the navigable Tennessee River and on the main line of the Illinois Central Railroad, it offers both rail and water transportation. Good flat construction land is at hand, as well as natural gas and TVA electric power. Potential users can be supplied acetylene by pipeline at available adjacent properties. Write for "The Chemical Century Comes to Calvert City" by the Agricultural and Industrial Board of Kentucky.

CHEMICAL PROGRESS WEEK-MAY 1-22

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A DIVISION OF AIR REDUCTION COMPANY, INCORPORATED

SPECIALTIES . . . . .

why of the ten major types of plastics now fabricated in expanded form, the polyester-isocyanate type is now causing the greatest stir. A safe bet is that Hudson's unique position won't last long.

•

Coffee Enhancer: Dodge & Olcott is on the verge of bringing out Coffee Aroma Enhancer, which is designed to restore to instant coffee the original flavor and aroma lost during its manufacture. The product, which comes in liquid form, is sprayed on the coffee after the drying process has been completed. Though the item is still in pilot plant production trial quantities are offered in 5-lb. bottles at $7/lb.

•

Castaway: A new company, Disposable Tooth Brush, Inc. has been formed in Buffalo, N.Y., to market a low-cost, disposable tooth brush. Inventor is John F. Bergmann who is also company head. The product resembles a conventional tooth brush. Its handle is plastic but bristles are tampico, a low-cost fiber. The dentifrice is activated under running water.

•

New Can, New Push: B. T. Babbitt's Babo-O is now being retailed in a giant economy size (21 oz.). It is being introduced in metropolitan areas.

•

Rust Reducers: Thin films that reduce rust on metal and provide a base for oil paints are a new product of Allied Research Products, Inc. (Baltimore). The films are chromatic conversion coatings, which are either colored or clear and which may be bleached off to give a surface for nickel or chrome plating.

•

Spray Washer Cleaner: A new alkaline cleaner for use in mechanical spray washers is now made by Detrex Corp. (Detroit). The product is employed prior to phosphate coating and is said to be free of caustic soda.

•

Can Carrier: The Aerosols and Refrigerants (Eston Chemicals) Div., American Potash & Chemical Corp., has developed a six-can Handi-Pack container for its Charg-A-Can disposable refrigerant containers. Virtues: the carton results in higher efficiency in storing Charg-A-Cans and provides an easy-to-handle carrier for the refrigerant service man.

•

Resin Repair: A sealing compound that can be used to repair castings, fill joints in sheet metal, and build up surfaces of patterns, molds and dies

SPECIALTIES . . . . .

is now offered by Smooth-On-Manufacturing Co. (Jersey City, N.J.). The product, called Metalset, is aluminum powder in an epoxy resin, is noncombustible. Price: $1/6 oz.

•

Paint Splash: Devoe & Raynolds is entering its 200th year with a big new advertising campaign aimed at the do-it-yourself painter. D&R points to surveys that show 80% of interior painting and 72% of exterior painting in American homes is done by the householder.

•

Bulletins: Among the latest are:

- Atlas Powder Co.—Sorbitol in Foods, a leaflet that describes sorbitol's characteristics and functions in food applications.
- The Emulsol Corp. (Chicago)—two bulletins, one describing Emcol Mas, a fatty amide high melting point wax used to opacify shampoos, raise the melting point of glyceride and paraffin oils; the other describing Emcol H-85A, a pesticide emulsifier.
- Barrett Division, Allied Chemical & Dye Corp.—a 41-page booklet on Niacin.
- Lunn Laminates Inc. (Huntington Station, N.Y.)—a 24-page brochure titled Glass Fiber Laminates For Shell Structures.
- Union Carbide and Carbon Corp.—an 8-page technical bulletin on acetonitrile.

•

Stir-in Resin: Monsanto Chemical Co. has introduced a stir-in type vinyl paste resin for textile and paper coatings, slush molding and dripping. It's tradenamed Opalon 410.

•

Tile Sticker: A tan-colored, synthetic rubber ceramic tile adhesive has been brought out by the Adhesives and Coatings Div., Minnesota Mining & Mfg. Co. It's called CTA-11. One pound, it's claimed, will do the work of some 40 lbs. of wet mortar.

•

Fire Bane: Pyrene Manufacturing Co. (Newark) now markets a new single-cylinder pressure-type vaporizing liquid fire extinguisher. Available in 1- and 1½-qt. sizes, it's filled with either carbon tetrachloride or chlorobromomethane.

•

Polyethylene Coat: L. A. Dreyfus Co. (South Plainfield, N.J.) now sells polyethylene resin compounds designed for extrusion coating of packaging materials such as paper, board, foil and film.

•

Reclassified Latices: Goodyear reports

water is costly!

squeeze it out of your resin production picture with

U.F. Concentrate–85

U.F. Concentrate–85 is the highest concentration of liquid formaldehyde commercially available...61% formaldehyde and 24% urea in a water solution!

. . . Here are 4 big reasons why you should use U.F. Concentrate–85 for the synthetic resins used in making molding powders, textile finishes, surface coatings, adhesives and special papers:

- **Increase** production in shorter time with existing equipment.
- **Reduce** processing time for dehydration.
- **Charge** larger batches to kettles.
- **Save** storage, handling and shipping costs.

This is another of the efficient process chemicals provided by the more than 60 years of research, experience and know-how that stand behind all Nitrogen Division products.

For full information and free folder on U.F. Concentrate–85, or other formaldehyde solutions, *write today!*

THREE OTHER HIGH PURITY FORMALDEHYDE SOLUTIONS

...for a variety of applications

Inhibited	Low Methanol
37%..Formaldehyde	...37% & 45%
7%....Methanol	.....1.5%
3.5%.....pH	.....3.5%

As with all Nitrogen Division Products, these three exceed the specifications of most industrial users.

NITROGEN DIVISION ALLIED CHEMICAL

NITROGEN DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Ammonia • Sodium Nitrate • Urea
Ethylene Oxide • Ethylene Glycol
Diethylene Glycol • Triethylene Glycol
Methanol • Formaldehyde
Nitrogen Tetroxide
U. F. Concentrate–85
Nitrogen Solutions
Fertilizers & Feed Supplements

SPECIALTIES . . . . .

that two Chemigum latices have been reclassified under the Pliolite series. Chemigum Latex 101A and 101AX are now designated as Pliolite Latex 101A and 101AX. Pliolite latices designate only stryenebutadiene types and Chemigum Latices only butadiene-acrylonitrile types.

•

Straw Mulch: Straw has been assigned a new role. In a recent Nebraska test, hydrolized sodium polyacrylate was tried for stopping soil erosion. Control was a straw mulch. The mulch at 2½ tons/acre stopped erosion better than conditioner at 2 tons/acre.

•

Defoamer: Hart Products Corp. (New York) has introduced Hartex Defoamer EC-16, a defoaming agent for general use in paper mills. Claims for it: disperses readily in water without cooking, has no rewetting properties.

•

Container Lining: Synthetasine Protective Coatings Inc. (New York) has begun making an improved interior coating for steel shipping containers that offers chemical and mechanical resistance over a wide baking range. The product, Synthetasine 200, is a thermosetting epoxy resin, comes in gray or clear and unpigmented. It is formulated for spray and rollercoat application.

•

Expansion: Some firms on the grow:

• Sherwin-Williams Paint Co. has received a certificate of necessity for a $1,062,588 can plant at Hubbard, near Youngstown, O.

• Frey-Yenkin Paint Co. (Columbus) plans to build a one-story $700,000 paint plant.

• Colgate-Palmolive Co. has started construction of new two-story office building in Louisville, Ky.

• Buffalo Kay Chemical Co. (Buffalo, N.Y.) has purchased The Liquid Veneer Corp. for a reported $250,000.

•

Curb for Crabgrass: Crab Herbicide-1 is now recommended for control of crabgrass in established lawns. Carbide and Carbon Chemicals Co., maker of the weed killer, suggests that it be applied in early spring and at monthly intervals during the summer.

•

Pressroom Cleanup: A nonflammable printing press ink remover that eradicates hardened ink from metal parts including aluminum has been developed by Gilbreth Co. (Philadelphia). The maker says the product contains no abrasives.

You pay no more for the finest DOP made when you buy from Eastman

We are constantly checking the quality of Eastman dioctyl phthalate against that manufactured by all other suppliers. These comparisons disclose that (1) no DOP is superior to Eastman DOP in any one of the following respects and (2) that Eastman DOP is superior to all others in terms of all five of these important properties:

LOW COLOR LOW ODOR LOW ACIDITY

HIGH HEAT STABILITY HIGH ESTER CONTENT

—yet Eastman DOP costs no more.

We invite you to make your own comparisons—write for specifications and sample quantities or see your Eastman representative.

Eastman
CHEMICAL PRODUCTS, INC.
KINGSPORT, TENNESSEE
subsidiary of EASTMAN KODAK COMPANY

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York—260 Madison Ave.; Framingham, Mass.—65 Concord St.; Cincinnati—Carew Tower; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; Houston—412 Main St.; St. Louis—Continental Bldg. **West Coast: Wilson Meyer Co.,** San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Seattle—821 Second Ave.

New products and profits with Armour Chemicals

Armour oleics still stable after 18 months—that means a longer, fresher life for your products!

In October, 1952, it was proved convincingly that Armour oleic acids could keep manufacturers ahead of competition with better products at no extra cost. The high stability of these oleics, which was proved by the Mackey test then, meant longer life, longer freshness to cosmetic, shampoo, soap, wax, and textile products.

Now, more than 18 months later, Armour chemists report that these superior oleic acids have withstood this test of normal shelf-life with no change! They have resisted oxidation, and rancidity; they still have excellent color; and they still have low unsaponifiable and high acid value. This means that soaps made with Armour oleics can be kept under constant heat for weeks, and still smell as fresh as the day they were made. This stability means that textile fabrics scoured and finished with Armour oleics will have no trace of unpleasant odor. It means that any product made with Armour oleics will last longer and stay fresh longer.

Armour's five superior oleics, covering all grades you need, offer this longer shelf-life for your products at competitive prices. Send the coupon now for further information and current price quotations.

Arquad® 12 adds firmness to that latex foam cushion

After latex is whipped into a froth, and sodium silicofluoride is added to produce gelation, comes a production problem – controlling the rate of gelation so the latex will gel rapidly into a firm sponge having a *uniform* cell structure.

Armour's answer to this production problem is Arquad 12, an efficient and economical gel sensitizer. Arquad 12 controls the rate of gelation of the latex, and enables it to gel more rapidly. This reduces shrinkage, and affords a better structure and a firmer gel.

Because it helps to produce higher quality latex foam sponge with no effect on color, Arquad 12 is the most efficient chemical you can buy for this application. Send the coupon for Arquad 12 samples and our technical bulletin, which gives complete information on the use of Arquad 12 in latex foam.

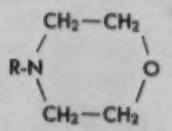
New antibacterial use discovered for Neo-Fat® 10!

Recent experiments with Neo-Fat 10 (Armour's fractionally distilled capric acid) indicate that it can be used as an economical antibacterial agent in sewage systems. Neo-Fat 10 gave a 99% decrease in bacteria (M. pyogenes var. aureus and E. coli) at a concentration of 1 part in 20,000. This efficiency will be of interest to chemists who are working on sewage problems.

Neo-Fat 10 is an excellent raw material for producing alcohols, aldehydes, ketones, esters, metallic salts and other derivatives. Other applications for this high purity capric acid and its derivatives include synthetic perfumes, disinfectants, anti-foaming agents, dyestuffs, pharmaceuticals and high-boiling solvents. Send the coupon today for samples of this versatile fatty acid.

Alkyl morpholines

The Armour Chemical Division announces two new cyclic tertiary amines now available in developmental quantities. They are the N-Alkyl morpholines derived from coco or tallow amines and have the structure:



where R = either coco or tallow.

These new surface-active chemicals exhibit some interesting solubility characteristics for use in the wax, paper and textile industries. Both are soluble (1gm/1gm solvent) at room temperature in acetone, benzene, isopropanol, tetrachloroethylene, mineral oil, VM and P naphtha and ethyl acetate. The following table presents some of the physical properties.

	N-coco-morpholine	*N-tallow-morpholine*
Color	6 Gardner	10-11 Gardner
Solidification point	-12° C	4-5°C
Boiling point	135-165°C @ 0.5 mm.	160-200°C @ 0.5 mm.
Density	Ca 0.90	Ca 0.90

Typical analysis of these two cyclic tertiary amines is as follows:

	N-coco-morpholine	*N-tallow-morpholine*
Primary amine	0.6%	2.8%
Secondary amine	0	0
Tertiary amine	94.0	95.4
Apparent morpholine	93.4	98.5

Send the coupon for free samples of these new surface-active chemicals.

MAIL THIS COUPON WITH YOUR LETTERHEAD

ARMOUR CHEMICAL DIVISION
1355 West 31st Street, Chicago 9, Illinois

Please send me:

- ☐ Oleic acid information and prices
- ☐ Arquad 12 sample and bulletin
- ☐ Arquads Booklet
- ☐ Neo-Fat 10 sample and coconut oil booklet
- ☐ N-coco morpholine sample
- ☐ N-tallow morpholine sample

Name.....

Title.....

Firm.....

Address.....

City..... Zone..... State.....

W

ARMOUR CHEMICAL DIVISION

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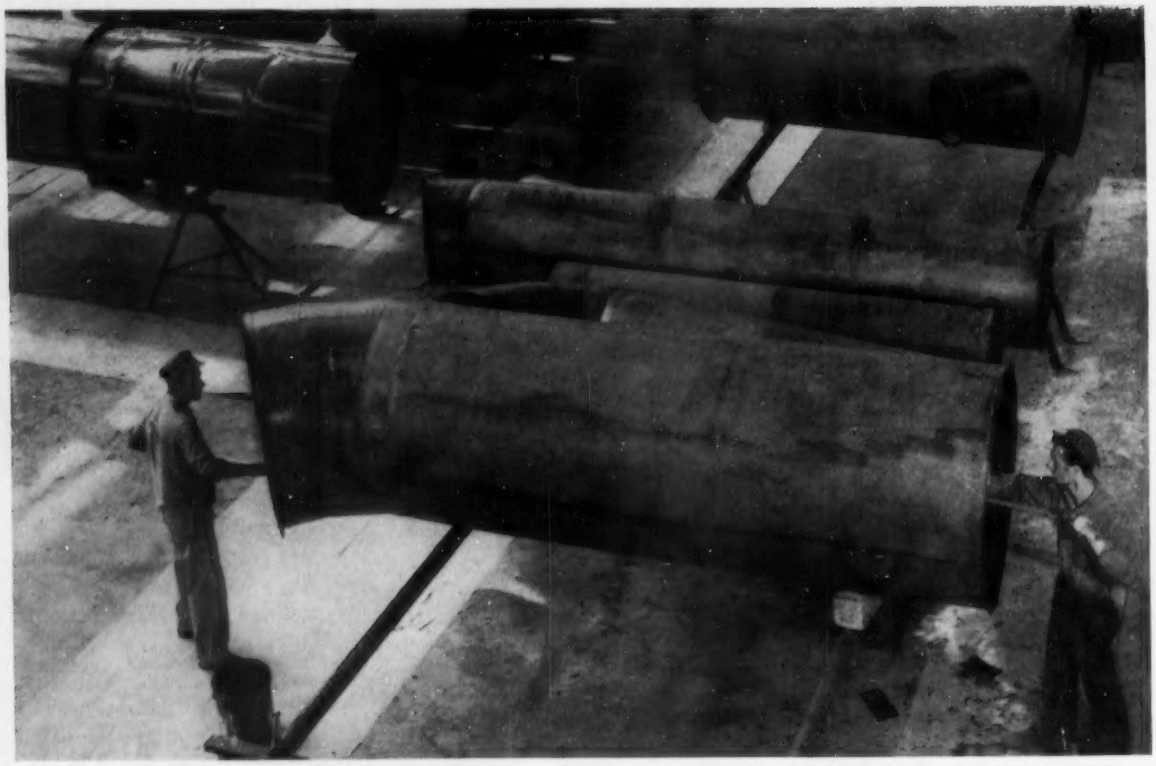
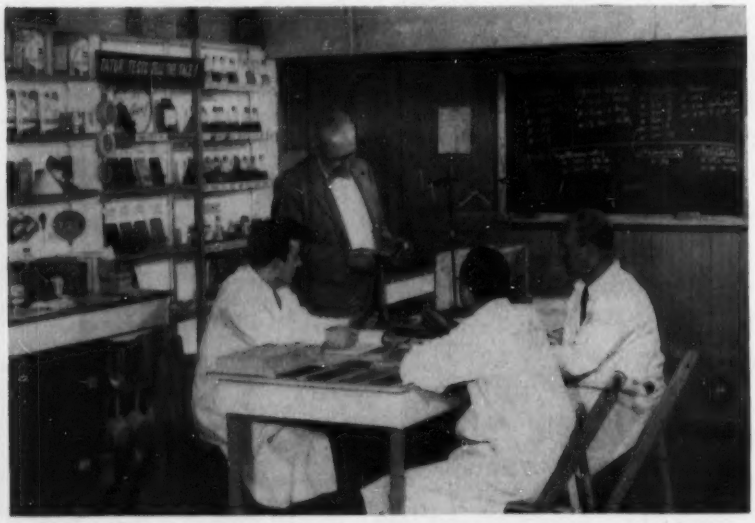


RUBBER COATING: Calling for skill and experience, it's part of the Gates course in . . .

How to Cure "Wrong-Way" Applications

Recently, one company, Gates Engineering of Wilmington, Del., decided it had had enough of ill-chosen uses, "wrong-way" application of its rubber and vinyl protection coatings. Gates' answer: a school for distributors' salesmen.

For a good many years, firms selling technical products have insisted on salesmen with a technical background. Behind this requirement: to discuss, suggest uses for and to service a product, the men had to know what they were talking about.



ACCELERATOR LESSON: Timing, mixing, drying—all fraught with pitfalls.

But companies using distributors have less control over the selling job, find that in gaining the convenience of using distributors, they also acquire headaches. And the usual prodding to push the company's line isn't all. Often, the serious problem is to educate the dealer in the ways of customer service. Frequently compounding this, too, is a lack of distributor know-how.

One traditional method of enlightenment is to deluge the dealer with company literature; another, to send around service representatives. Unfortunately, however, more than one firm has found the brochures stacked unread in the distributor's bookcase, the service visit a misty memory by the following month.

No exception are firms selling rubber coatings: products designed for outside surfaces have been used instead to line containers; time-thrifty supervisors have curtailed curing

TROUGH TECHNIQUE: Dipping, like brushing, rolling or spraying, depends on . . .

times; and surfaces have peeled quickly as a result of poor priming. Encountering the same problems repeatedly, service agents became aware that salesmen were selling a product they didn't understand.

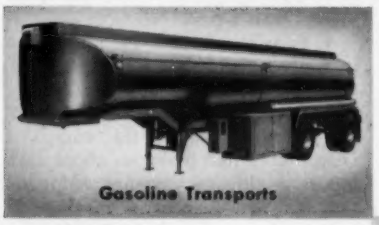
In setting up the school, explained Gates Engineering's George P. Kern, Jr., vice-president, the company's objective was to give men the knowledge and know-how necessary to sell a technical product. To do this, the course was built on three prime considerations:

- What products are the best sellers;
- What problems correspondence indicated are most in need of elaboration; and
- What operations require special techniques.

Training, conducted in two- or

SURFACE PREPARATION: Basic for all successful coating applications.

GREATEST LINE IN TANK-TRAILER HISTORY!



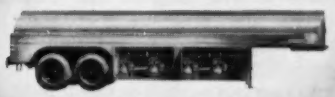
Gasoline Transports

Here are just a few Fruehauf models

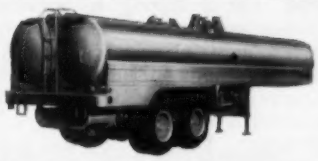
Wherever, whenever, there's a liquid-hauling job to be done, there's a Fruehauf Tank-Trailer specially designed to do it *profitably!* Fruehauf's line of Tank-Trailers is the broadest, the finest, in the Trailer industry!

Western Truck-Full-Trailer Gasoline Combinations

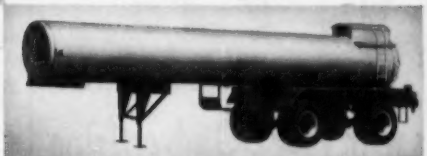
A Cutaway View of the Gasoline Transport



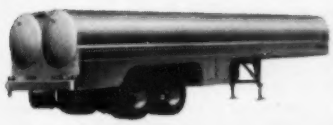
Fuel Oil Tank-Trailers



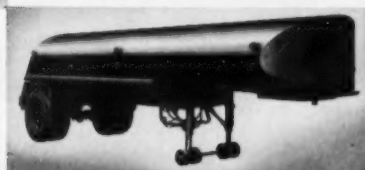
Twin-Cylinder Casinghead Transports



Stainless Steel Acid Transports

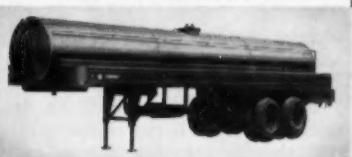


Twin-Cylinder Propane and Butane Trailers

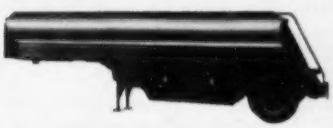


Stainless Steel Alcohol Tank-Trailers

Plastics Transports

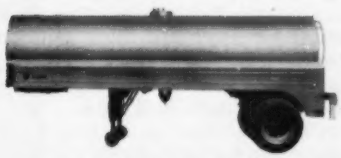


Low Pressure Hot Sulphur Trailers

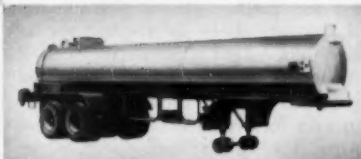


Solvents Transports

Truck-Tanks



Low Pressure Latex Tank-Trailers



Carbon Steel Insulated Acid Trailers

Formaldehyde Transports of Plastic Construction

Calcium Chloride Transports

FRUEHAUF TRAILERS

"ENGINEERED TRANSPORTATION"

For complete information on Fruehauf's full line of Tank-Trailers, or about any specific unit for your business, call your nearest Fruehauf Branch or write to Fruehauf Trailer Company, 10970 Harper Avenue, Detroit 32, Michigan.

three-man groups, starts with a get-acquainted tour. Here officials spell out the "why" of the school: to sell a technical product, you've got to know where to use it, where not to, how to apply.

Instruction is carried out by the service department—frequently by its head, Walter "Duff" Weil. Plain-spoken old-timer Weil first runs down nomenclature, explaining coding for the products. Then he pitches into these skills and facts a salesman needs:

- Surface preparation. Learning by doing, salesmen sandblast, wirebrush, work corners, smooth down "hills."
- Primer application. Importance of choosing right primer for the right surface is stressed. "Duff" and the men paint a thin prime coat, see how it holds coating better.
- Accelerator dispersion. Mixed in just before using, accelerators speed curing. Proper mixing is essential, otherwise coating won't cure evenly.
- Coating application. Most of the course time is spent here, where students, by actual practice, learn brushing, roller coating, flowing, spraying, and curing. Shown, too, are such subleties as: "light pressure," "right" amount of material on brush.

Next phase, general discussion, is a question-and-answer period. Here men learn use of technical data sheets, what information to relay to the company in complicated cases. Questions are cleared away and the instructor reviews the course.

During the session, Weil veers students away from alleged "short cuts." Although rubber coating isn't any trickier than paint, he reminds them, there is a nuance: while the coatings look like paint, they handle more like enamel.

Finals: Before becoming "professors" themselves, salesmen take a required 15-question examination. The quiz shows up potential misuses and need for further study. Those who fail, repeat; those who pass get a fancy, blue-edged diploma.

What do the salesmen think of the school? To find out, the last quiz question asks for comments. General consensus: the time's well spent. One considers the classes an "absolute must"; a second remarks, "It gave a good idea of how to use the products and where not to."

Chief benefits salesmen find: improved service, detailed knowledge of uses. Giving the customer the right product and the right methods mean a satisfied user. And, the more applications a man sees, the more outlets he finds.

Besides abetting service and building product goodwill, Kern lists these gains for Gates:

- Outlet evaluation. From questions asked, attention paid, the distributor can be sized up. The company can determine who'll be "cataloger," who'll push products actively.
- Prevent misuses. Training salesmen gives them data to weigh application, impart know-how.
- Dealer reassurance. The visit builds confidence in the company. Distributors like to know about adequate production, prompt shipping, quality control. And the school is solid evidence of a desire to give the dealer tangible aid.
- Certainty of learning. Test and classes insure that the subject matter is covered, not just flipped through in brochures.
- Intelligent communications. The course evokes intelligent, useful questions.

Not only are the salesmen keen, but Gates is well satisfied too. For although the program is barely 10 months old, Kern cites two impressive results:

- Correspondence is down 50%.
- Representatives spend twice as much time in the field since they don't have to answer repetitive calls.

Since its launching, over 60 men have been trained. Some of the students have journeyed from as far as Sweden and Okinawa. Almost all have industrial sales background.

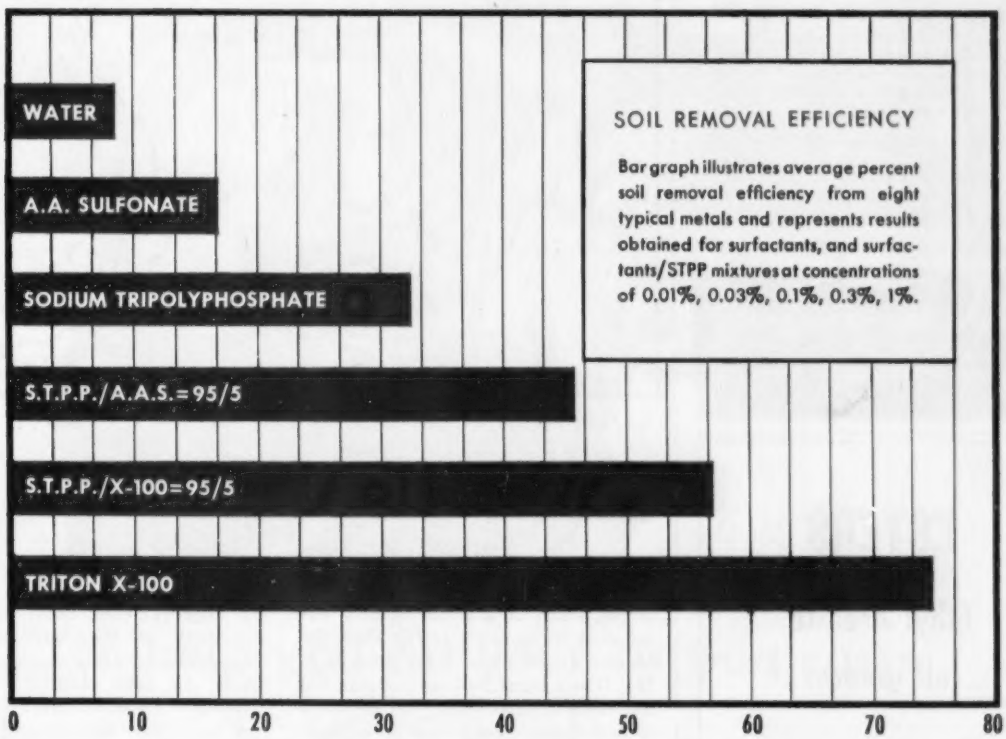
Customer Classes: Not all salesmen are trainees, however. Application shops, shipyards, and volume users find the technical schooling pays off. These men often staying a week, acquire coating techniques for marine and industrial application. Estimating, too, is a part of the "graduate study."

Eventually, Kern hopes to train salesmen from all the company's 90-odd distributors. But future pupils are likely to find some changes. Currently planned: elastic training agenda; elaborate evening sales session. As spelled out by Kern, men would get application costs and estimating, a seminar with men returning from sales safaris, and tailoring of course to fit individual needs.

Currently, Gates is cashing in on recent national publicity for its "liquid neoprene." To meet demand, a separate retail division has been established.

And, taking no chances, the wholesaler's salesmen are going to the factory's school. Wholesalers will, in turn, impart know-how to retailers, who'll pass it on to the do-it-yourselfer. This, Kern feels, will keep the coating on the lamp post, the auto top from cracking.

ALUMINUM, ZINC, IRON, STEEL, BRASS, COPPER AND SILVER...
TRITON X-100 CLEANS THEM ALL



Newest data obtained by the Rohm & Haas Dynamic Detergency Test confirm that the cleaning efficiency of a typical low cost cleaner is improved appreciably by TRITON X-100. The bar graph shows that on eight different metallic surfaces the effectiveness of sodium tripolyphosphate is increased 73% by the addition of 5% of TRITON X-100. However, an equivalent amount of an alkyl aryl sulfonate added to sodium tripolyphosphate increases cleaning efficiency by only 39%. Without alkaline builders TRITON X-100 is over eight times better than water; under the same conditions the alkyl aryl sulfonate is only twice as effective a cleaner as water. Complete figures on these results—showing relative effectiveness of detergents in soil removal and prevention of soil redeposition on hard surfaces—will be sent upon your request.

Clip this information for your reference files. If you would like technical assistance on the uses of TRITON surfactants write us.

TRITON is a trademark, Reg. U. S. Pat. Off. and in principal foreign countries.

CHEMICALS FOR INDUSTRY

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

EXPANDING: Dow affirms its faith in water movement with a new . . .

Distributing Tool

One morning early last week, a shiny new tanker could be observed moored at the wharf of a sparkling new terminal at Bayonne, N.J. The ship: the Marine Dow-Chem (CW, Jan. 9, p. 50), Dow's latest tool for carrying out the task of distributing the products of its Freeport, Tex., plant to markets along the East Coast. The terminal: a multimillion-gallon receiving and storing facility, designed specifically to handle the chemical cargos to be carried by the new ship.

Dow, together with Marine Transport Lines and Bethlehem Steel's Shipbuilding Division, took about three years to design the vessel. Compared with the *Marine Chemist*, the converted tanker Marine Transport Lines has been operating for Dow since 1949, the *Marine Dow-Chem* has several points of superiority.

Briefly, the new ship stacks up as 87 ft. longer, 4 ft. wider, 25% faster and a capacity over 40% greater. (For *Marine Dow-Chem* statistics, see box.)

Apart from its greater transport capacity, the new vessel differs from its older sister in other ways. Of special pride to Dow management are new design and engineering improvements, many of which, according to the builders, result from experience in the operation and use of the older ship.

Some of these features:

- Protective arrangement for cargo tanks. The new ship is constructed with double bulkheads. Result: a minimum of two thicknesses of steel between (a) any two cargo tanks and (b) cargo tanks and the sea.
- Separate product transfer systems. Each item is moved by means of its own pipes, pumps, connections and vents.
- Cathodic protection. Magnesium anodes, each weighing 60 lbs., are bolted to the hull—three groups of each on each side. This is the ship's built-in system of corrosion prevention.

Old Ports: Initially, the new tanker will follow much the same route taken by the *Marine Chemist*. Taking on a full load at Dow's Texas Division plants at Freeport, it will call at:

- North Charleston Terminal, S.C.

Available Again!

PITTSBURGH

Granular Carbons . . .

. . . to help you cut your carbon costs up to 83%!

DO YOU employ solvent recovery, catalyst support, gas purification or similar adsorption processes which utilize granular activated carbon? Then check with us today—for popular Pittsburgh Granular Carbons are available once again to help *cut* your carbon costs and actually *increase* the efficiency of your process.

Pittsburgh Granular Activated Carbons are *coal-derived* adsorbents with a unique selective ability to attract and retain certain gases, liquids and dissolved substances with which they come in contact. They are readily regenerated and are produced in sizes from 4 to 30 mesh to meet most adsorption requirements. The initial cost of these highly versatile Pittsburgh Carbons is considerably lower than similar materials.

Thanks to a recent expansion in our productive capacity, Pittsburgh Granular Carbons are now available to satisfy any commercial demand. So contact Pittsburgh *now* and begin cutting adsorption costs in your plant today. We'll welcome the opportunity to send you samples and literature, or to provide technical assistance. *Call or write today.*

WAD 5138

ACTIVATED CARBON DIVISION

PITTSBURGH
COKE & CHEMICAL CO.
Grant Building • Pittsburgh 19, Pa.

COAL CHEMICALS • AGRICULTURAL CHEMICALS • FINE CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

Bayonne Terminal Facts

Owner and operator
Lehigh Warehouse & Transportation Co.
Builder
Engineers Co., Inc., Newark, N.J.
Total capacity
3¼ million gal. in 12 tanks

Individual chemical facilities:

73% caustic soda
2 nickel-clad, 650,000-gal. tanks
35% hydrochloric acid
2 rubber-lined 430,000-gal. tanks
Carbon tetrachloride
1 160,500-gal. tank
Chloroform
1 110,000-gal. tank
Glycols
2 Amercoat-lined 430,000-gal. tanks
Methylene chloride
1 (Hortonspheroid) 210,000-gal. tank
Perchloroethylene
2 160,000-gal. tanks
For mixing—one 58,000-gal. tank for blending different grades of perchloroethylene.
For drumming—facilities for filling and storing 55-gal. drums of carbon tetrachloride and perchloroethylene.

Caustic is the principal product to be discharged at this port. And although Dow has shipped in 50% caustic for several years, the new ship will soon deliver 73% material to a new 15,000-bbl. storage tank.

• Paulsboro Terminal, N.J. Chief bulk chemicals that Dow will continue to discharge at this port are chlorinated hydrocarbons.

• Carteret, N.J. Just as it will continue Dow's service at North Charleston and Paulsboro, the new vessel will deliver to the storage terminal at this point. Caustic soda and glycols are principal items.

• Allyn's Point, Conn. The *Marine Dow-Chem* will feed styrene from Texas to Dow's plant here.

New Port: Situated in a strategic location in Dow's over-all bulk chemical distribution system, a new terminal at Bayonne will service customers within a several-hundred-

Marine Dow-Chem Figures

Length: 551 ft.
Beam: 68 ft.
Draft (loaded): 29 ft. 7¾ in.
Capacity: tank cargo of 16,000 long tons—or 3½ million gal.
Speed: 15 knots.
Cost: $8 million.
Complement: 42 officers and men.

Dry sodium methylate fits perfectly into process requirements of safety and exact control. Further, it does not bring in any excess methanol. Easily storable, it is the most practical form of this sensitive but highly useful chemical.

Pure, uniform Mathieson *dry* sodium methylate is used as a chemical intermediate or catalyst in the production of dyestuffs, pharmaceuticals, insecticides, improved fats and oils—and in other processes involving metathetic, oxidation-reduction, condensation and ring-closure reactions.

As the only producer of dry sodium methylate for fifteen years, Mathieson has grown steadily in experience and know-how in the safe production, handling, and application of this material. For complete information, samples and technical assistance, see your Mathieson representative or write.

MATHIESON CHEMICAL CORPORATION
Mathieson Hydrocarbon Chemicals Division
Baltimore 3, Maryland

Chemical Progress Week, May 17-22

2386

ETHYLENE GLYCOL • DIETHYLENE GLYCOL • TRIETHYLENE GLYCOL • ETHYLENE OXIDE • METHANOL
DICHLOROETHYLETHER • ETHYLENE DICHLORIDE • SODIUM METHYLATE • ETHYLENE DIAMINE • HEXAMINE

DISTRIBUTION. . . .

mile radius. It was designed specifically with the *Marine Dow-Chem* in mind and will handle a majority of the chemicals carried by the new ship.

Built for Lehigh Warehouse & Transportation Co., owner and operator, the terminal has a 12-tank storage capacity totalling 3¼ million gal. (For breakdown of facilities, see box.)

Triple Threat: The *Marine Dow-Chem* is Dow's answer to a triple threat that confronts today's heavy chemical maker. According to Dow, these factors that are leading to growing water-borne traffic in chemicals are:

- Distance. To be economically sound, producing plants should be close to raw materials; finishing plants near ultimate consumers.
- Quantity. With the American industry capacity now stepped up, now established at an all-time high, vast quantities of chemicals are now moving from basic producers to be processed or converted before reaching the ultimate consumers.
- Cost. Transportation charges for most basic chemicals, unlike those for specialty or fine chemicals, represents a substantial percentage of total costs.

Capable of bearing upwards of 80 million gal. of liquid chemicals out of Freeport every 12 months, the *Marine Dow-Chem* is one company's partial answer to the triple-threat transportation problem.

•

Building briefs:

- Upjohn, Inc. is erecting a $200,000 warehouse and sales office in Denver, Colo., its fifteenth branch. The Denver center will serve Colorado, New Mexico, Utah and adjacent areas in nearby states.
- Sharp & Dohme, division of Merck, has opened a new Chicago branch building. The structure supplies 20,000 sq. ft. for warehousing and 5,000 sq. ft. for offices.

•

Dixie Sales Study: Consumer purchases of 300 Memphis, Tenn. families, statistically selected, are now available from the *Commercial Appeal-Memphis Press Scimitar*. Grocery, drug, apparel, and home furnishing buying of the families for the last six months of 1953 is presented by store-type, merchandise group, brand, race, and month. Obtainable from the newspaper's research department, Memphis 1, Tenn.

•

For your reference file:

- Society of the Plastics Industry is currently distributing the booklet

How "Dutch Boy" Chemicals help

the plastics industry

upgrade quality and reduce costs

Have you heard about the new *double-duty* "Dutch Boy" Plasticizers . . . announced recently?

They make you wonder what National Lead Research will come up with next! Here, for the first time, are factory pre-balanced plasticizers that permit vinyl processors to obtain both low temperature flexibility and low volatility at the same time . . . without sacrificing any other property.

Want outstanding low temperature flexibility with good low volatility? "Dutch Boy" NL F-41 will give it to you. Want to reverse the emphasis? Go to "Dutch Boy" NL F-21. Want 'em in balance? Use "Dutch Boy" NL F-31.

It's as simple as that . . . and for makers of vinyl film, sheeting, extruded products, organosols and plastisols, down goes the cost of producing quality vinyl products. And "Dutch Boy" double-duty Plasticizers, made to the same high standards as "Dutch Boy" Stabilizers, simplify processing, too. No more need to use a half dozen plasticizers to obtain desired properties.

In vinyl plastisols, *Dutch Boy Bentone* gelling agents are helping the formulator control viscosity more precisely.

Should you care to explore the new vinyl formulating opportunities opened up by the "Dutch Boy" Plasticizers, or "Dutch Boy" Stabilizers, or *Dutch Boy Bentone* gelling agents . . .

Or if you would like to know more about other National Lead Chemicals . . . just fill out the coupon. Mail it attached to your letterhead, please.

*Reg. U.S. Pat. Off.

NATIONAL LEAD COMPANY
111 Broadway, New York 6, N. Y.

In Canada: CANADIAN TITANIUM PIGMENTS LIMITED
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Gentlemen:
Please send me the latest information concerning the uses of your new chemicals in the following fields:

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Name_____

Title_____

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Address_____

City_____ State_____

Buy **Dutch Boy® CHEMICALS**

...and get the plus of a name you know...for quality

DISTRIBUTION. . . .

"Act Now . . . Here's How." Beamed at retailers, the brochure details aspects of the society's promotional campaign to improve vinyl film standards.

• "Selling to the Atomic Energy Commission" provides lists of materials purchased, directory of purchasing offices, and buying channels. Catalog No Y 3.At 7:2 Se 4/2, Government Printing Office, Washington 25, D.C.

•

Sales shifts:

• Monsanto Chemical Co.'s Inorganic Chemicals Div. has moved its Southeastern branch sales office from Birmingham to Atlanta. G. C. Davis, who has been district sales manager at Birmingham, will continue as division head at the new location.

• A Southwestern sales division has been formed by Carbide and Carbon Chemicals Co. The new division, which will serve Missouri, Arkansas, Louisiana, Texas, Oklahoma, Kansas, Colorado, Wyoming and Utah, will be headed by F. J. Rauscher. Rauscher, formerly St. Louis district sales manager, will continue to headquarter in that city.

• Chas. Pfizer & Co. has formed a Chemical and Agricultural Sales Div. According to Charles Specht, president of Pfizer foreign trade subsidiaries, the new division will handle worldwide distribution of fine chemicals and pharmaceuticals in bulk and antibiotics for veterinary and feed supplement use. John Teeter, formerly Pfizer's Far East regional director, will manage the new division.

• Maxim Chemical Co., Inc., New York City, has been appointed chemical sales representative for J. C. Gilbert, Ltd., London.

• Liquid Plastics Corp., Long Island City, N.Y., has been formed to handle exclusive distribution of Plastispray, liquid vinyl spray developed by Progressive Industries, Inc. The latter, however, will continue as metropolitan New York applicators for Liquid Plastics Corp.

•

Distribution Degree: Clarkson College of Technology has joined the ranks of those giving a degree in distribution. Starting next fall, a four-year course will blend engineering, business administration. Need for the new curriculum, particularly in heavy industry, was indicated by research. Clarkson is adding over 13 new courses to provide the necessary background for "distribution engineers".

They're Back Again!

SHARPLES AMYLAMINES FOR HIGHER OIL SOLUBILITY

Amylamine
Diamylamine
Triamylamine

The amylamines are back again after six years—especially to help you in the manufacture of oil-soluble products. Many products of this type can be made satisfactorily with the less expensive Sharples butylamines, but others require higher oil solubility than the butylamines can give.

We recommend the amylamines for these critical uses:

- Oil-soluble catalysts
- Oil-soluble corrosion inhibitors
- Oil-soluble acid acceptors and extractants
- Intermediates for oil-soluble:
  - Rubber and agricultural chemicals
  - Pharmaceuticals
  - Surface active agents
  - Antioxidants
  - Dyes

Diamylamine and triamylamine salts are also useful acid corrosion inhibitors in aqueous systems.

The amylamines are available now in semi-commercial quantities. Commercial production can start quickly on demand.

PROPERTIES OF SHARPLES AMYLAMINES

	Amylamine	Diamylamine	Triamylamine
Specific Gravity at 20°C	0.76—0.78	0.77	0.78—0.79
Boiling Range	87—115°C.	175-202°C. (95%)	234-260°C.
Flash Point (open cup)	65°F.	160°F.	210°F.
Color	Water-white	Water-white	Water-white

For additional information, samples and prices write to:

SHARPLES CHEMICALS INC.

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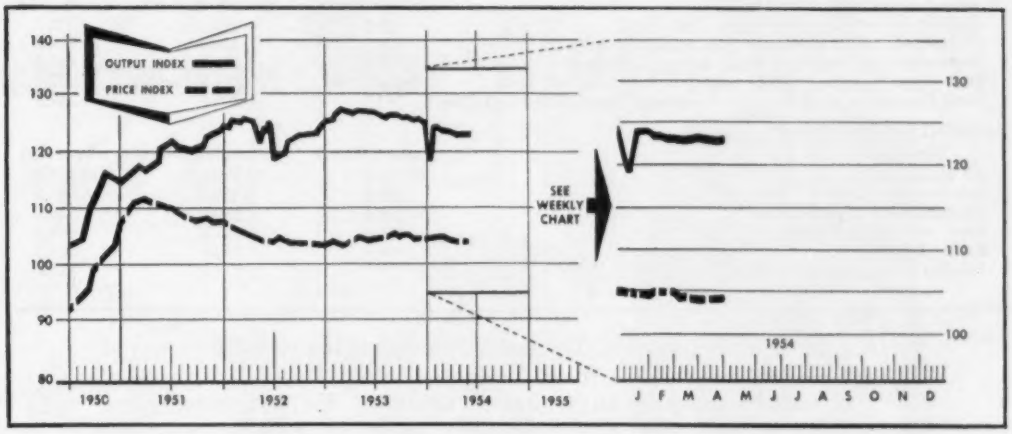

CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

What's ahead for chemicals? Some chemical marketers continue to back their conviction that the future looks rosier with a difficult-to-deride argument—expansion.

Late last week, for instance, Jefferson Chemical underlined its confidence in ethanolamines consumption, revealed plans for an approximate 50% hike in productive capabilities at Port Neches (Tex.) plant. While Carbide and Carbon will maintain top-producer spot in the field (about 45 million lbs./year capacity), Jefferson's new installations will, by the end of the year, make it possible for the latter company to challenge Dow Chemical for second place honors; both will be able to produce, in varying ratios, some 13-15 million lbs./year of mono-, di- and triethanolamine.

Some of Jefferson's increased production will wind up in morpholine—a good indication that such prime outlets as self-polishing waxes, rubber chemicals and rust inhibitors may also be in for decided upturn.

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There's no question at all, though, that cellophane demand will get brisker. At least Du Pont's just-announced plans to up production by 25 million lbs./year *(CW, Jan. 16, p. 80)*, underscores that belief.

The new expansions—at Du Pont's Richmond (Calif.) and Clinton (O.) plants—will be operating later this year. Popularity of cellophane-wrapped foods is behind the market optimism.

•

With an eye on lush farm, industrial and defense outlets in the area, Mississippi River Fuel Corp.—as its first step toward easing into the petrochemical field—will put up a $15-million, 200-ton/day ammonia plant on the Mississippi River (Crystal City) just south of St. Louis.

The plant, expected to be producing by early 1956, will market some 100 tons/day of anhydrous ammonia, some 230 tons of ammonium nitrate.

•

Here's the latest on Commerical Credit Corp.'s progress in whittling the 300-million-lb. raw linseed oil surplus, which had once been ear-

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	123.3	123.3	126.5
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.3	104.3	104.2
Bituminous Coal Production (daily average 1,000 tons)	1,113.0	1,123.0	1,462.0
Steel Ingot Production (1,000 tons)	1,636.0 (est.)	1,654.0 (act.)	2,262.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	298.7	294.5	251.2

MONTHLY INDICATORS—Employment (Thousands)	Latest Month	Preceding Month	Year Ago
All Manufacturing	12,561.0	12,813.0	13,767.0
Non-durable Goods	5,287.0	5,389.0	5,621.0
Chemicals and Allied Products	528.6	540.3	526.6
Paper and Allied Products	433.9	436.2	440.2
Rubber Products	198.1	199.9	220.1
Petroleum and Coal Products	177.7	177.1	187.2

marked for defense purposes. The agency was planning to sell overseas at an over-all loss of about 21¢/lb. *(CW Market Letter, May 1).*

Last week a quick buyer, Garnac Grain (N. Y.), snapped up some 44.8 million lbs. for export to "friendly countries"; price, 7¢/lb.

Representatives of the domestic oils and fats and linoleum industries met with the Director of the Commodity Stabilization Service in Washington recently, discussed just such low price tags on sales to foreign countries. One bitter complaint heard: the oil comes back to this country in finished product form, competing with U. S. products in U. S. markets.

•

There's nothing low, however, about the prices being asked for the slim quantities of mercury lying around the market. Quotes as high as $250/flask (76 lbs.), are currently being heard. Compare that with last fall's $184.

It's known, of course, that the government is responsible for the tight market, but the material taken is not going to the strategic stockpile. Hint of the outlet: the recent Bureau of Mines report, which indicated that mercury has been used in one of four experiments for appraising the prospects for private industry participation in the "production of electrical energy and fissionable materials from reactors."

•

And, as might be expected, the dearth of mercury for nongovernment users has, by this week, jacked up the prices of many derivatives. Added to these recent major mercurial increases—corrosive sublimate (to $4.03/lb.); white precipitate (now at $5.75/lb.)—are advances ranging from 50¢ to 65¢/lb. on a fistful of minor mercurials.

Both red and yellow technical grades of mercury oxide are, at the moment, bringing $4.77 and $4.70/lb. respectively. Some others: iodide red, up 50¢ to $6.97/lb.; mild oxide ointment, now selling at $1.99 (up 25¢/lb.).

•

Some prices, however, continue to slip back. Prime gasoline additive, tetraethyl lead, for example, last week underwent a second-in-two-months revision. Du Pont, following Ethyl's earlier lead, posted these reductions: motor mix compound, down .613¢ to 37.687¢/lb.; aviation mix, reduced the same amount to 41.267¢.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending May 10, 1954

UP

	Change	New Price		Change	New Price
Crude glycerine, saponification, 88 pcs, tanks, dlvd.	$ .01	$ .21	Mercurials—		
Crude glycerine, soap lye, 80 pcs, tanks, dlvd.	.01	.18	Yellow oxide, bbls., 1,000-lb. lots	.55	4.70
			Red iodide, NF, fib. drms.	.50	6.97
			Chloride, NF, cryst., drms., 50-lb. lots or more	.50	4.18

All prices per pound unless quantity is stated.

RELY ON THE "C"-man...

● Three years before the inventor of the reaper built his first factory in Chicago in 1850, the Chase Bag Company was making better bags for American agriculture and industry.

Backed by 107 years of packaging experience

Chase Bag experience costs you nothing, yet it's apparent in the recommendations of every "C"-Man.

It's apparent in every Chase Bag product, too . . . the 107 years' insistence on quality—a striving for maximum product protection and package appeal.

You cannot put your packaging problems in more capable hands. You cannot put your product in better bags. *Contact your "C"-Man today!*

over a century of know-how is behind every CHASE PROTEX BAG

Waterproof Protection For Your Chemicals

Chase PROTEX bags are made from high quality TOPMILL Burlap or tested cotton fabric...laminated to crinkled kraft with various adhesives. Cemented center seams and taped bottom eliminates porous sewing holes, assures additional moisture proof protection. A pre-formed dry-seal closure eliminates sewing.

For samples and current prices, write Department 21-E

CHASE BAG COMPANY General Sales Offices: 309 W. Jackson Blvd., Chicago 6, Ill.
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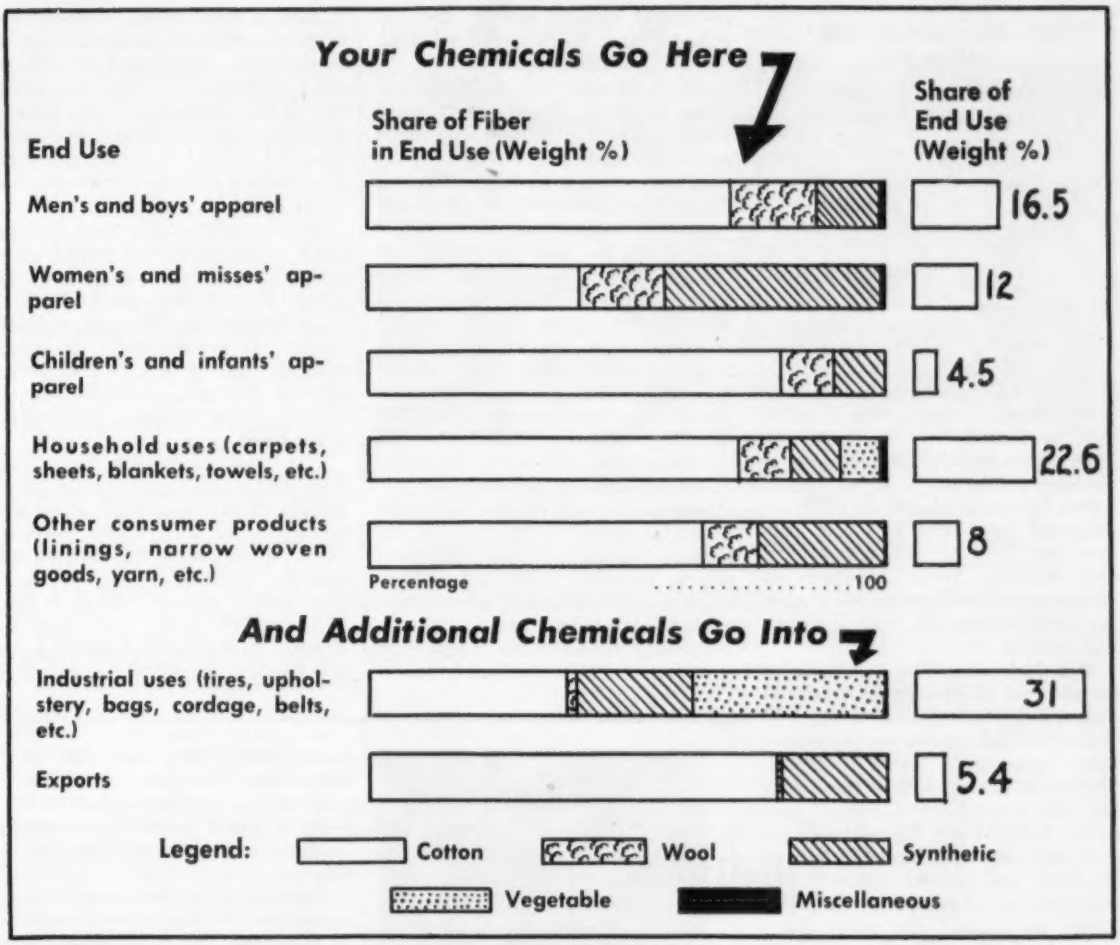


Chemicals by the Yard

Textile chemical and dye makers fear that a serious first-quarter drop in most fiber shipments is a portent of 1954's textile activity.

One textile-finishing chemical manufacturer summed up the sales picture for the past season: "It couldn't have been worse." Even so, many are expecting a gloom-brightener—higher consuming rate—in the second half of the year.

But note the vexatious '54-'53 percentage skid based on fiber shipment poundage for the comparable first quarters: cotton, —8%; viscose and cuprammonium rayon (staple and tow), +48%; acetate rayon (staple and tow), —36%; apparel wool, —32%, and carpet wool, —15%. (Cotton and wool percentages are based on only the first two month of 1954).

Little comfort can be derived from the apparent viscose rayon upturn, since imports of that commodity were much higher in early 1953 than in this year. However, some new domestic viscose production boosted this year's first quarter. There is little acetate rayon imported, and other man-made fibers have cut into this market. The state of affairs reached in the first quarter is highlighted by this observation: barely 40% of the looms working man-made fibers were in operation.

It's a fair question to ask whether textile chemical and dye manufacturers are forewarned of these sharp changes in fiber consumption. Indeed, changes are posted by their salesmen, who hear from textile finishers how orders are coming in from direct customers or from converters and agents. But so far, few figure-gleaners in dye and chemical plants tie statistics on fabric purchases into production schedules and sales.

Probably the most advanced collection of U. S. textile end use consumption data is that made available to industry by Du Pont. It represents the conversion of Bureau of Census data into pounds by the use of various yardage-to-weight ratios, as well as other factors. The latest end use study is that just completed for 1952 (*see chart above*). Earlier studies made by Du Pont present 129 itemized end uses and compare major use trends for the years 1937, '49, '50, '51.

Cotton on Top: It's still clear that cotton heads the parade of textile fibers despite the steady growth of man-made fibers during the past 15 years (*see table, p. 100*).

Prognosticators look for a drop of 5-10% in cotton goods production in 1954 from a level rate in 1952-53. Bleach and dye consumption will fall accordingly. Of an annual total of slightly over 7.5 billion yds. produced in 1952 and 1953, about 3.4 billion yds. was bleached and white-finished; 2.4 billion yds., plain dyed and fin-

Est. Consumption, 1953 (million lbs.)	
Cotton	4,250
Man-made	1,500
Vegetable (soft and hard)	950
Wool	630
Linen	10
Silk	5
Total	7,345

ished; and 1.8 billion yds. printed and finished. In recent years, a fairly constant proportion—50-55%—of all cotton broad woven goods is either dyed or printed.

Of approximately 2 billion yds. of viscose and acetate rayon broad woven fabrics produced in 1953, it's estimated that about 81% was plain dyed and finished, 11% was printed and finished. About two-thirds of an estimated broad woven nylon yardage of 330 million yds. was plain dyed and finished.

Dye Jockeying: The vast bulk of the national 150-million-lb. output of Colour Index coal-tar dyes (another 40 or more million pounds are ungrouped dyes) goes into textile products. Slightly more than 85% of these dyes fall into four chemical classes: azo, sulfur, indigoid and thioindigoid, and anthraquinone vat. Probably half of all dyed and printed cotton goods and likely two-thirds of viscose rayon goods are colored by direct dyes, most of which are in the azo class. Direct dyes have declined very slightly—from 22% of the coal-tar dye market during the 1944-50 period, to a little less than 20%. The azo chemical class (including chrome, direct, and acid) represents a larger portion of dye output: about 36%.

Increasing in popularity are the vat dyes (anthraquinone, indigoid, and thioindigoid) that offer light and wash-fast colors. The indigoid types are not quite so color-fast as the anthraquinone vat. It's true that vat dye consumption to some extent is tied to military needs, but vat dyes should keep over 35% of U. S. dye output even with nominal governmental purchases.

Least expensive of the lot are the sulfur dyes, which have hovered around 13% of national dye output in recent years. They're used principally for dark shades where moderate fastness is adequate. They are reasonably fast to washing and perspiration, but not to bleaching.

Wool dyeing is 75% by acid dyes, the remainder chiefly by chrome dyes. About 75% of the nylon that is dyed consumes acetate colors; the remainder takes up premetallized, acid, chrome and direct dyes.

Bleach Blues: The declining fortunes of cotton also gauge those of textile bleaching compounds, for a relatively small percentage of wool or acetate rayon is bleached. Because its decomposition products are simply water and nascent oxygen, hydrogen peroxide is far and away the most used cellulosic fiber bleach. It accounts for 80% of all textile mill bleaching of cotton, and for 60-70% of viscose rayon bleaching. One market estimator says that about 45 million lbs. of 35% hydrogen peroxide pours into bleaching annually. Sodium or calcium hypochlorite and liquid chlorine whiten the remainder of the cellulosics in the mill.

Sodium hypochlorite and hydrogen peroxide share about equally in bleaching acetate rayon. Bleachers choose peracetic acid and sodium chlorite for nylon and other man-made noncellulosic fibers.

Another basic textile finish that will slacken with a weakening cotton market is mercerizing. Cotton yarn or piece goods are mercerized under tension with a solution of 21-23% sodium hydroxide. Today mercerization is big business—on broadcloths, gabardines, twills, sateens, and many other fabrics. Most nationally advertised sewing threads receive this lusterizing.

Still the most widely used finishing agent for cotton fabrics, from bags to percale, is starch. Yet it's losing ground to resin impregnations, which are more durable. Then,too, starched fabrics can become tacky in humid weather. Blends of corn and potato starches are used in textile mills to stiffen cotton fabrics, particularly white goods.

Low-grade fabrics are often backfilled with starch to give a fuller hand. The starch may also serve as a binding agent for such fabric fillers as china clay or kaolin, talc, barium sulfate, etc. Dextrin in place of starch gives weight without stiffness, is used on cotton knit goods. The major use of starch in the textile industry is not in a finishing operation, but rather in

Shortage Bulwark

During the shooting periods of the decade ending this year, U. S. military requirements have often been the stimulus of industry and market growth. But mere anticipation of such a need was one of the incentives behind the phenomenal growth of powdered iron.

Less than four years ago the expectation that the armed services would switch to wide-scale use of iron powder rotating bands* (*see cut*), abandon the old-time gilding metal (90% copper, 10% zinc) bands which have been in use since Civil War days, convinced iron powder producers that their industry would be wholly inadequate to meet any exploding demand.

Thus ambitious plans were laid, completion of which, by the end of this year, will boost designed productive capacity to more than 10 million lbs. of iron powder a month. That's a near 10-fold increase over pre-Korea consumption; more than four times the little more than 2 million lbs./month estimated as the current rate of use.

But although war-purpose demands have not as yet materialized to any great extent--Ordnance Dept. tests of the relative merits of the iron powder band vs. the gilding metal product are still under way—producers and fabricators are not too concerned about the soon-due overexpansion.

Optimism evident in the trade, of course, is based on the fact that powder metallurgy—transformation of metal powders into useful objects by pressing and sintering—is successfully bucking the more conventional die casting, sand casting, screw machining, stamping and other precision metal forming methods. One boast it saves some 36 separate maching operations.

*Band near base of shell, which imparts necessary spin to the projectile.

warp sizing of cotton. Gelatine does this job for viscose.

Utility Finishes: During the past 10 years there's been a tremendous development of the functional textile finishes. They are the ones that make a fabric repel water, prevent mildew or moth damage; resist crushing, wrinkling, or spotting; give minimal shrinkage, and retard flames. A rise or fall in the production of any specific type of fabric affects similarly the use of finishing compounds, since they are usually applied by the yard.

A fairly standard textile treatment that uses a multitude of different compounds—none of them short— is the softening of fibers. It's done with oils or waxes of relatively high molecular weight. Solubilizing groups such as the cationic secondary amines and quaternary amines are added to the hydrocarbon for easy application.

A surprisingly large amount of fabric is now treated for water repellency. For a long time this treatment was confined to rainwear. Today the sport jacket is likely the most profitable field for water-repellent fabrics Emulsified waxes or hydrophobic aluminum soaps are typical compounds applied to give a nondurable, but retreatable water-repellent finish.

Resin Revolution: More durable repellents depend on a chemical reaction with the fiber. One familiar type contains pyridine or picoline and methylol-stearamide. But the farthest-reaching revolution in fabric treatment has come with the impregnation of cotton and viscose rayon with such thermosetting resins as urea-formaldehyde and the melamines.

The resin revolution in textile finishing isn't confined to water repellents. In fact, textile finishers now create a wide range of properties by suitable treatments of fabrics with water-soluble monomers (polyvinyl alcohol, polyacrylic acid, styrene-maleic copolymer), solvent-soluble thermoplastic polymers (acrylics, polyvinyl acetate and chloride, styrene-butadiene copolymer, etc), and thermosetting monomers (urea- and melamine-formaldehyde condensates, and modifications thereof).

Here are some of the sales-building resin transformations of established fibers. Impregnation with monomers and polymers can upgrade cotton goods to look like satin, linen, leather, or wall paper. Moreover, the resin adds weight and a fuller hand at less cost than additional cotton. One can get replicas of piques, seersuckers, heavy cords, crepes. The finisher provides crease or wrinkle resistance by using monomers that penetrate the

fiber and leave a minimal surface coating of resin. (Actually, most wrinkle-proofing does not prevent wrinkling so much as it facilitates wrinkle recovery.) Part polymerized resins are built up on the fabric surface for a hard or stiff hand. They are often used with the monomer forms.

Recent sales effort has featured combinations of properties given by resin treatments. Water-repellent fabrics don't stain or spot readily. Wrinkle-resistant fabrics wash and iron more easily and dry more quickly. With crush resistance, you also have some shrinkage control.

Despite the finishers' brightest sales plans, major producers of monomers and polymers for the textile industry envision a 10% decline in sales this year compared with last. A spokesman for one resin manufacturer points out that rayon finishers have slashed orders for resin products.

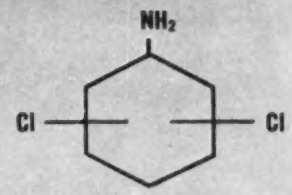
None of the utility finishing treatments has had more publicity recently than fire retardants. The sales manager of a prominent textile chemical manufacturer anticipates a dramatic clamor for fire retardant chemicals this year. Concern over the hazards of easily ignitable textiles led to the federal Flammable Fabrics Act, passed by Congress last summer, This law goes into effect this July (*CW, May 8*).

It's unfortunate, however, that the textile finish for which demand may rise the most—the fire retardant—is a type that doesn't give a satisfactory hand to the fabric, or may dull colors. Also it's conceded that the cost of a permanent, washable, and dry-cleanable fire retardant is unattractively high. These complaints are right now accelerating the search for more desirable products.

Borax, borate resins, and certain ammonium salts are among the compounds that will be sought after as these civilian outlets call for fireproofing: wearing apparel, curtains, drapery upholstery materials, mattress tickings. So far the largest consumption of fire retardants has been in military uses where appearance is less of a criterion.

The textile chemical or dye manufacturer—like any other member of the chemical industry—can worry about growing inventories in a slackening market. But alert salesmen, and more and better statistics, will forewarn him of danger spots. It's not too fanciful to predict the eventual use of electronic punched-card techniques to analyze samples of consumer behavior and their impact on dye, bleach, and finishing chemicals.

DICHLOROANILINES
Technical



2-5 DICHLOROANILINE
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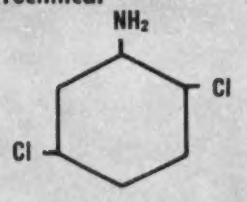

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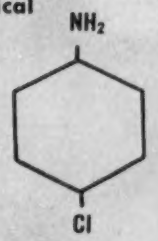

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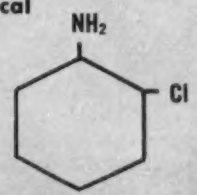

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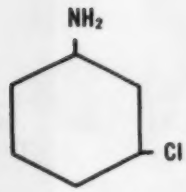

m-CHLOROANILINE Technical is a water-white to light-amber liquid that tends to darken on storage. But like all other Du Pont chloroanilines, it can be stabilized* to retard color development. The sum of the ortho and para isomers contained as impurities is less than 2%.

Specifications:

Purity:	Moisture content:
98% minimum	0.5% maximum
Freezing point:	Molecular weight:
−11°C. minimum	127.6

WRITE NOW for more information on m-Chloroaniline Technical and other members of this promising Du Pont chemical family (see vertical panel). And if your process calls for a specific product, depend on Du Pont to produce the right intermediate to meet your requirements.

*m-Chloroaniline 5 Technical

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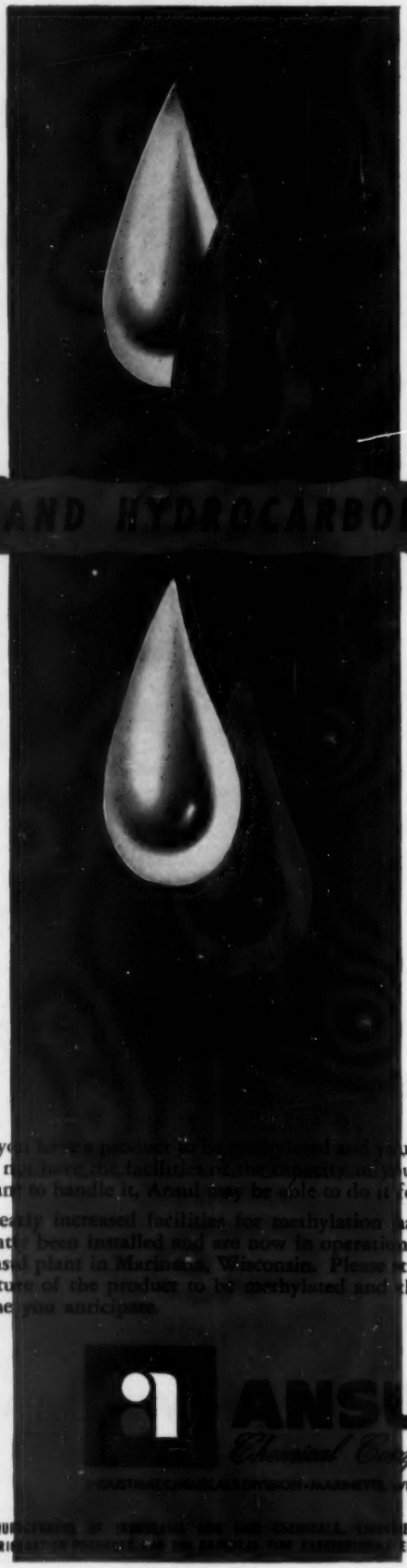

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[redacted]

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$CH_3OCH_2CH_2OCH_3$

[redacted]

DIETHYLENE GLYCOL DIMETHYL ETHER
$CH_3(OCH_2CH_2)_2OCH_3$

[redacted]

TRIETHYLENE GLYCOL DIMETHYL ETHER
$CH_3(OCH_2CH_2)_3OCH_3$

[redacted]

TETRAETHYLENE GLYCOL DIMETHYL ETHER
$CH_3(OCH_2CH_2)_4OCH_3$

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PRESIDENT GOODRIDGE: For a start, hope.

RESEARCH DIRECTOR WAINER: For a lab, the cellar.

Believers in the Big Man

Today's odds are decidedly against parlaying a shoestring and an idea into an automobile, railroad or petroleum fortune. The American success story isn't dying; but it is changing form with the changing times. And research is emerging as the modern free enterpriser's gambit.

If you don't believe that, just take a look at the growing slate of active firms that are making contract research pay—to the tune of more than $1 million/year. Or, better still, go out to the Cleveland research laboratories of Horizons Incorporated, where you can see it happening.

Last week, in the backstretch of its eighth year of existence, hustling Horizons was making news in television as well as in technology. While one squad of its research people was in Chicago (at a meeting of the Electrochemical Society) making the first public disclosure of the company's closely guarded electrolytic titanium research, another group was spouting simple electrochemistry on a television program* out of Cleveland's WNBK.

*Part of the Cleveland Technical Societies' "Adventures in Engineering and Science" series, the show is part of a continuing drive to get high-school students interested in scientific careers.

In Washington, meanwhile, Horizons lawyers are in the thick of titanium negotiations with the General Services Administration. For the company, the deal involves the construction of a pilot plant (*CW Newsletter, May* 8) to evaluate its electrolytic process. Horizons has high hopes that the proposed unit will prove the soundness of some radical designs for getting its maverick brainchild (all commercial titanium production is by the Kroll process) out of the incubator.

The pilot plant would be built and operated at government expense. But, if company hopes are fully realized, it's likely that construction costs would be repaid in scarce titanium. Although it might be almost three times the size of Horizons' Cleveland titanium pilot setup, the new unit would turn out only negligible tonnage of the metal. The agreement will be completely unlike GSA's relatively large purchase deals with Du Pont, Cramet and Titanium Metals.

Details of the process are a deep secret, but Horizons research director Eugene Wainer reveals cryptically that the new pilot plant will embody "different philosophy" than that of its predecessor.

The entire titanium venture is in the hands of Horizons Titanium Corp., an affiliate firm in which ownership is shared by its staff, Ferro Corp. (Cleveland), the Rockefeller family, and outside individuals who have purchased stock.

In similar fashion, the other fruits of Horizons Incorporated's scientific efforts are controlled and marketed by a covey of affiliates specifically organized for that purpose. Contrary to a widespread misconception, the company is interested in more than titanium. Specializing in structural chemistry and solid-state physics, its research with wollastonite sparked the formation of Northern Minerals Co., in which Horizons has a 10% share. The remainder is held by the family that owns the wollastonite-rich New York state tract from which the mineral is extracted and utilized by Godfrey Cabot and Co. (Boston).

Horizons Zirconium Corp., a third offshoot, is controlled by company staffers and the Rockefellers. As its name implies, the firm was conceived to exploit the production of zirconium by an electrolytic technique. By this process the metal has reportedly been produced on a scale approaching

CHARTING* THE RESEARCH COURSE: At the top, little enchantment with ultraspecialists.

that of present commercial thermal methods.

Now in the process of formation are two new Horizons offspring: Macwain Industries, a joint venture by the firm and Malcolm McAllister (executive vice-president of F. W. Berk & Co.) to market Horizons-developed chemical specialties such as a new aluminum solder; and a company called Metalphoto, that will push a method of printing a photographic image on aluminum plates.

Purely a research organization, Horizons Incorporated is vitally concerned with the morale of its creative talent, operates what may be the most unusual incentive-spurring system in American industry. Members of the staff are frequently given the opportunity to share in the rewards of their work through ownership participation (to a degree determined by salary, length of service, personal contributions, etc.) in companies springing from Horizons-conceived ideas.

It's not surprising therefore that the enthusiasm for submitting suggestions has imbued just about everyone in the organization. As a matter of fact, two or three suggestions a month can usually be expected from the secretarial staff. And every Horizons staffer knows that every idea will be thoroughly evaluated, regardless of its source.

*Left to right: John Burwell, associate director of research; James L. Wyatt, technical manager; and Wainer.

Not by a long shot is all of the company's work self-sustaining; only four such projects are now active. By far, the largest part of its research is sponsored by industry and government. And much of this effort is, oddly enough, the result of ideas conceived by Horizons people. The company will scout out a likely sponsor for a budding project, offer him first crack at underwriting the development costs. If the work is successful, patents and know-how, of course, become the property of the sponsor.

Right now, the company is seeking sponsors for the development of these potentially rewarding ideas:

- New pyrochemical process of turning out such inorganics as calcium carbonate, sodium and potassium phosphate, aluminum salts and silicates.
- Heat-resistant inorganic polymers.
- Eliminating silver salts as a photographic medium.
- Highly pure tantalum.
- High-temperature adhesives.
- Single-crystal approach to magnet preparation.
- Utilization of the iron sulfate and copper in waste pickling liquors.
- Production of anhydrous chlorides without chlorine.
- Cladding of base metals with zirconium, titanium and tantalum.
- Purification of impure reactive metals—e.g., scrap titanium.

At the helm of Horizons' varied research program is prolific* Eugene Wainer who—with Edwin Goodridge, its president—launched the company in 1946. Both were previously with Titanium Alloy Manufacturing Co., the former as associate research director, the latter as executive vice president. They decided to strike out for themselves when TAM was acquired by National Lead.

"All we had when we started," Wainer recalls, "was hope." The infant firm's material needs were soon satisfied, after a fashion. A linen closet in Goodridge's Princeton, N.J., home became Horizons' first office; Wainer's cellar was pressed into service for a laboratory.

From its modest beginnings, Horizons has mushroomed to a 111-person research unit. With the recent commissioning of new Cleveland laboratories, total research area is now a roomy, 32,000 sq. ft. Executive offices are still at Princeton, though considerably better located.

Horizons' secret of success? The right kind of researcher. And, according to Wainer, that's today's "big" man in scientific research—the man with the pioneer attitude and the potential for channeling his talents into new fields of investigation.

A high degree of specialization holds little enchantment for Wainer. "Like the athletics coach," he declares, "I'll take the good 'big' man every time."

*Wainer is the possessor of a whacking 200 patents.

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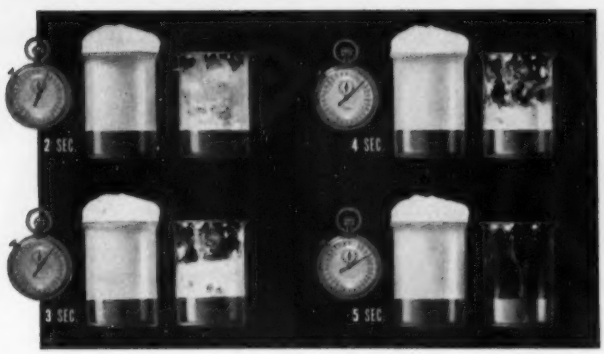

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New Look in Nonionics

Thirteen new Hercules Powder Co. surface-active agents are molding a new look in the chemistry and potential applications of nonionics. Charter members of the company's new Synthetics Dept. line, they fall into three series: AF (polyethylene glycol esters of alkylated phenol); AR (polyethylene glycol esters of rosin); and AD (polyethylene glycol esters of rosin alcohol).

Envisioned uses range from oil field jobs to the removal of extrusion lubricant from aluminum foil.

Compatibility (with most anionic and cationic surface-active materials) and stability are key attributes of the new products.

Although nonionics from tall oil* have been around for some time, Hercules' are claimed to be the only ones based on rosin alcohol. The company, incidentally, has an exclusive (although unpatented) process of manufacture of the saturated rosin alcohol for the AD series.

Also backing Hercules' bid for a piece of the nonionics field is a substantial raw material source—its new phenol plant (Gibbstown, N.J.), expected to go onstream in the fall. In addition, Hercules' unique continuous multiphase oxethylation system (Burlington, N.J.) is said to be proving economically superior to batch systems in operation and uniformity of product.

Generating enthusiasm for the new nonionics is the assignment of the Synthetics Dept.'s development division. Right now, the outlook is brighter for industrial rather than household uses. Research is continuing, however, exploring applications as well as the chemistry of new hydrophobic groups and the commonly used oxides such as ethylene.

Price range is 22-40¢/lb. At this level, they're cutting a niche for themselves in petroleum producing operations in Texas, Oklahoma and Pennsylvania. Acidizing is a typical application: the nonionic is incorporated in a 15% hydrochloric acid solution, expedites removal of hard-water deposits from around the oil-well bore. In secondary recovery operations, 25-50 ppm. in water helps to flush oil out of low-permeability areas, also acts as a deflocculant for bentonite clay that often hinders oil removal. At 200-500 parts per million, the nonionics scrub oil off the walls of the oil dome. Key to success in these processes is stability to temperatures as high as 275 F† in the presence of salt concentrations up to 10%.

Other uses:

- Toxaphene, lindane, chlordane, or DDT can be emulsified, reports Hercules, using AD 50 and AF 100 along with an alkylarylsulfonate and hexylene glycol.
- As a paint remover, either AF 100 or AD 160 is said to be effective in combination with methylene chloride, carbon tetrachloride, methyl alcohol, a mixture of di- and tri-isopropanolamine, methylcellulose, paraffin, and water.
- A combination detergent-emulsifier for machined parts in industrial degreasing is based on AF 40 and AF 100 with hexylene glycol and isopropanol. This mixture, added to kerosene, may be flushed off with water after grease removal.
- As a 4-5% substitution for regular hydrocarbon lubricants, the new nonionics act as self-contained emulsifiers. But they are too corrosive and insoluble for use in motor oils.
- At least one member of each series has reportedly been found effective as a static eliminator on fibers.

Talked about among the household-type formulations is a low-foaming detergent suitable for automatic washing machines. It's based on AD 160.

Hercules has also worked out formulas for the new nonionics that conform to U.S. government specifications for certain detergents and emulsifiers. But the company isn't planning to get into the formulating business, intends the formulas only as guides for its nonionics customers.

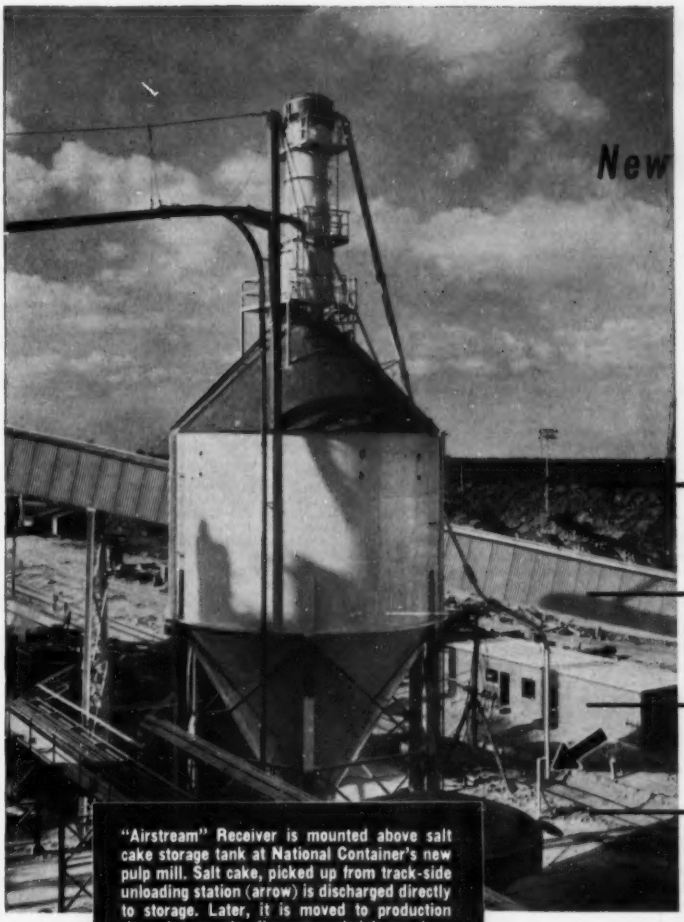
With tall oil and rosin competitive in price, nonionics made from them are also in a price toss-up. Whether the special traits of the newcomers will firmly establish them as nonionic best-sellers is what naval stores suppliers, including Hercules, are wondering at the moment.

* Some examples: Monsanto's Sterox, Blockson's Teox, Atlas' Renex (all made by esterifying tall oil with ethylene oxide).

† Temperature in an oil well increases 1 F for each 60 ft. of depth.

New Under the Sun

ANOTHER NEW USE for ultra-refined silicon (*CW, Jan. 30*) is the solar battery recently unveiled by researchers of Bell Telephone Laboratories. The battery uses strips of silicon (about the size of razor blades) that together deliver power from sunlight of 50 watts/sq. yd. of surface. Conversion efficiency is 6%—comparable to that of gasoline and steam engines. Shown dissecting their unique battery are inventors G. L. Pearson, D. M. Chapin and C. S. Fuller. Other silicon-using devices being studied at Bell include an improved lightning protector for telephone lines, and a rectifier.



"Airstream" Receiver is mounted above salt cake storage tank at National Container's new pulp mill. Salt cake, picked up from track-side unloading station (arrow) is discharged directly to storage. Later, it is moved to production through conveying line suspended from wires.

New National Container Plant Relies on Dracco Airstream for:

SWIFT SURE HANDLING OF SALT CAKE

Dracco's "Airstream" Conveying method is preferred again!

This time, "Airstream" has been put to work handling salt cake at National Container Corporation's new plant in Valdosta, Georgia. Large tonnages of salt cake (or sodium sulfate) are consumed daily at National's plant to make up the cooking liquors necessary for producing wood pulp.

The Dracco system performs two vital materials handling jobs—unloading to storage and transporting to process. Incoming box cars are emptied by one man from a track-side unloading station. All salt cake is moved directly to a 90-foot storage tank at 15 tons per hour without loss or contamination.

For daily production requirements, this versatile Dracco installation also withdraws salt cake from storage and conveys it some 175 feet to a nearby plant. There, the salt cake is discharged directly to process tanks.

Highly automatic, this efficient handling system assures minimum labor costs and permits economical bulk purchasing. Designed and engineered by Dracco, it provides completely dependable, low-cost materials handling for National Container.

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Organic Chemist—All course work toward Ph.D. completed. Twelve years diversified experience in organic synthesis, detergents, emulsions, pharmaceuticals, textile and architectural products; desires responsible position in Metropolitan New York area. Age 34, married, family. Phi Lambda Upsilon. PW-2731, Chemical Week.

Organic Chemist—Ph.D.—Nine years diversified experience, including supervisory, in synthesis and process development from lab through full scale production. Special training and experience in pharmaceuticals, including formulation of new dosage forms and quality control. Publications. Age 34, family. Desire challenging opportunity with progressive organization. Location immaterial. PW-2734, Chemical Week.

Research development or administration. Ph.D. Physical chemistry Age 39, 12 years diversified experience in food and dairy science and technology, chemical additives, surface active agents, carbohydrates. Desires responsible position with future. Publications, Patent pending. N.Y., N.J., New England preferred. PW-2522, Chemical Week.

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WSC'S DANA: His paper may be the answer to aircraft people's jitters.

Double Troubleshooter

N, N'-di-β-naphthyl-p-phenylenediamine is the key to a new facsimile paper that reportedly gets around sparking and too-rapid drying—two drawbacks of commercial papers.

Object of keen interest by a number of firms, the paper is covered by a just-issued patent.

Payoff of a six-year Washington State College probe (supported by the Office of Naval Research), the novel paper could clinch a berth on ships and planes using volatile gasoline and diesel oils. Its appeal rests on safety considerations arising from the fact that it doesn't require an arc to inscribe. Moreover, the product is used and stored dry, eliminating special packaging and processing procedures.

Facsimile processes currently in use require a moist paper that calls for airtight containers, poses drying problems in use. If the paper dries too rapidly, it tends to spark under the electric current of the inscribing machine. And that's the kind of thing that is guaranteed to give aircraft safety people the jitters.

Facsimiles could justify their weight many times over on aircraft by permitting the rapid transmission of weather maps and navigation information. In studies directed along this line, weather maps were radioed successfully from Guam to Washington State College. Transmission by wire allegedly gives equally good results.

Inventors of the new facsimile paper are Homer J. Dana, director of Washington State's engineering experiment station, and R. L. Albrook, industrial research director of the college's technology institute. The gov-

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MAY 15, 1954

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RESEARCH . . . . . .

ernment has just granted patent number 2,677,651 (assigned to the college) on the invention, reserves royalty-free use.

The facsimile paper, explains Dana, is electrochromotropic, reproduces a dark-brown image on a grayish-white paper. Impregnation is accomplished by running the paper stock through an electrochromotropic solution of N,-N'-di-β-naphthyl-*p*-phenylenediamine; over drying tunnels; through an aqueous conductive solution of ammonium nitrate and glycerine; over drying tunnels again; and finally through calendering rolls.

In use the chemically treated paper is inscribed by an electrically charged stylus that carries a varying current (up to 50 ma). Dana points out that the color produced can be changed by switching the stylus metal (from copper to iron or steel).

Although the new dry process paper is beamed at aircraft application, several companies, he reports, have shown interest in other uses. Case in point: the paper is claimed to have been tested successfully in machines developed by the *New York Times* for producing facsimile newspapers.

Other likely commercial applications are also under scrutiny in several quarters.

Sizing Up the Enemy

OZONE, worst enemy of rubber, is the culprit detected by this ingenious new portable ozonometer developed by B. F. Goodrich Co. researchers James Beatty (*above*) and Arthur Juve. The device tells ozone concentration in air by graphically revealing the strength-loss of a strip of rubber held under tension.

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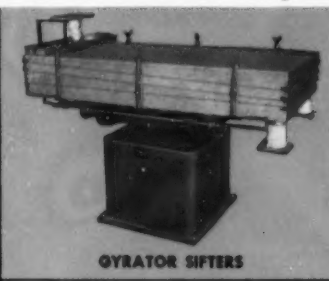
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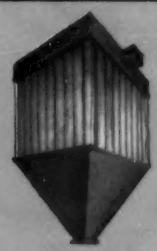
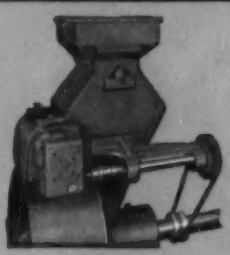

TUBULAR DUST COLLECTORS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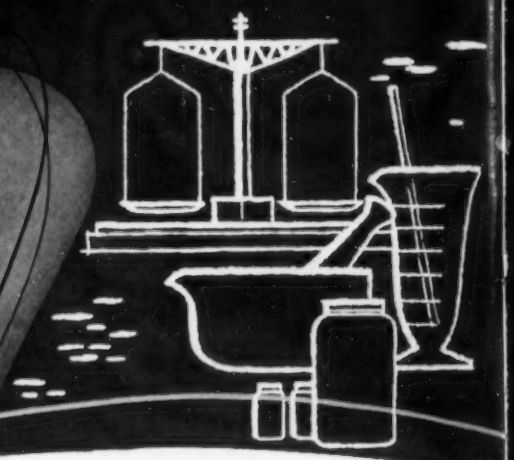

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